



Created by Leslie Mueller

Training Type: Negative Split Training Drills

Working Zones: High Zone 3 – Zone 5a

Cycling Specificity: 5

Total Class Length: 60 minutes

Profile Description

This profile uses the concept of “Negative Split Training” to assist the rider in developing body awareness, and aerobic capacity. The competitive cyclist will have an opportunity to practice pacing skills. A “Negative Split” is an effort that is somewhat easier or slower in the first half than it is in the second half. Almost all of the world running records have been set with a 51/49 ratio, meaning the first half was completed in 51% of the total time and the last half in 49% of the total.

According to Joe Friel – author of “The Cyclists *TrainingBible*” and JoeFrielsBlog.com – the 51/49 negative split is one of the most difficult skills for an athlete to learn but it is the most basic to their success. Going out too fast in a race means you will have higher levels of acid in your blood and therefore your body will be less efficient and you will experience more pain. Going out too slow in a race means you will have trouble catching up to the leaders. 51/49 seems to be the magic number. An athlete must have keen awareness, confidence and practice self-control to accomplish a 51/49 effort while faced with the stress of racing. As a fitness enthusiast, training in this way will help you to become more efficient and therefore capable of more work. More work = more calories burned.

This workout has three 10 min time trial efforts. The first 5 min of each TT is ridden in zone 3 or at an effort described as hard. The next 3 min are ridden in zone 4, which is slightly harder and the last 2 min are in zone which is a very hard effort. There is a full recovery of 5 minutes between each 10 min interval and each time trial is on a different terrain.

Objective and Intensity:

To describe the objective and intensity of this workout, I will divide it into the physiological and the psychological.

The Physiological Objectives:

1. To improve aerobic development.
 - a. When we ride in zone 3 at 10-20 beats below threshold for 5 min of each interval, the primary system at work is aerobic therefore the primary source of fuel is fat.
2. To improve the body's ability to clear acid metabolites or lactic acid.
 - a. When we spend 3 min during each interval riding in zone 4, at or just below threshold, the aerobic and anaerobic systems are working side by side. The body is working hard to clear the acid that the anaerobic system is producing therefore we are becoming more efficient at clearing and, over time will raise the lactate threshold.
3. To improving lactate tolerance.
 - a. When we ride in Zone 5 or above threshold for 2 min during each interval, the anaerobic system is the primary system at work therefore acid is accumulating in our muscles and blood stream. The body is asked to work in an acidic environment. Your tolerance for working in an acidic environment is improved.

The Psychological Objectives:

This workout challenges the rider to be responsible for pacing: to hold back just enough so that they can maximize their efficiency and performance. The better job the coach/instructor does to create an intense race like environment, the more effective the training will be. Research has shown that an athlete can accomplish faster times in a trial event when it is performed with a 51/49 negative split. The stress of racing makes this very difficult for most athletes and therefore an important skill to practice. This ride will help teach the athlete to approach events in this manner.

For the General Fitness Enthusiast:

This workout helps to maximize the amount of work an individual is capable of doing. The more work an individual can do in a given amount of time, the more calories they will use and the more fit they will become.

51/49 Negative Split Drills

The Warm-up: 10 min

Song #1 One, Bruno From Ibiza 5:46

Introduce the workout

Good evening everyone. Tonight you will have an opportunity to train like a pro. We will be using the concept of “Negative Split Training” to help you develop your body awareness, your aerobic capacity and, if are a competitive cyclist, you will have an opportunity to hone your pacing skills. A “Negative Split” is an effort that is somewhat easier or slower in the first half than it is in the second half. Almost all of the world running records have been set with the 51/49 principle, meaning the first half was completed in 51% of the total time and the last half in 49% of the total.

According to Joe Friel – author of “The Cyclists TrainingBible” – the 51/49 negative split is one of the most difficult skills for an athlete to learn but it is the most basic to their success. Going out too fast in a race means you will have higher levels of acid in your blood and therefore your body will be less efficient and you will experience more pain. Going out too slow in a race means you will have trouble catching up to the leaders. 51/49 seems to be the magic number. An athlete must have keen awareness, confidence and practice self-control to accomplish a 51/49 effort while faced with the stress of racing. As a non-competitive fitness enthusiast, training in is this way will help you to become more efficient and therefore capable of more work. More work done = more calories burned and overall, a more fit body.

Today, you will have three opportunities to practice this skill. Each effort will be treated like a 10 min time trial. The first 5 min of each TT you will ride in zone 3 or at an effort that feels hard but could still talk if you really needed to (but don't :). the next 3 min you will ride in zone 4 which is just below breathless and the last 2 min you will push to zone 5 which is a breathless and very difficult effort. So basically, your first effort is hard, your second is harder and your last is hardest. We will take 5 min of recovery between each effort and each TT will be on a different terrain.

Your current resistance should be at about a 3 or 4, on a scale of 1-10, 10 being the most resistance you would ever add. Your cadence should be about 90

and your effort easy as we are just warming up. You are riding a flat road but you can feel some resistance in your pedals.

Song #2: Body Language/Interpretation, Booka Shade 5:00
3 x :30 Leg Surges with :30 recovery

Before we begin our first TT effort, I want you to surge your legs to get them used to working at a higher cadence and effort. I want you to surge your effort in two ways: add a bit of resistance and bring your cadence up. Are you ready? Ok, lets go! Take it up to about 95 or 100 RPM. (Hold them there for about 30 seconds) Focus of your smooth pedal stroke, form always comes first. You should never bounce in the saddle when you ride, if you find that you are, either add resistance or slow down a bit. OK great. Now back off your resistance to where it was. (Allow 30 - 45 seconds to pass in between surges. Repeat 3 times. Have them stand on the second surge and cue about hips position when standing. On the 3rd surge, I have them add a little more resistance than they had on the first one. Then ask them ...)

Are you ready for your first 51/49 time trial? Your first effort will be similar to a true time trial, which is typically on a flat course. Take your resistance up to about a 5, cadence around 90. We will come out of the saddle for the first 20-30 seconds so that we can overcome the inertia of starting a race and get our hear rates up to zone 3, then we will settle into the saddle for the remaining 4 1/2 min.

Time Trial #1: Flat Road 10 min

Song #3 Rail Yard, Junkie XL 4:37
Zone 3

Ok, here we go. Add enough resistance to stand and surge. Remember this is a time trial, going out at a 51% effort is not an easy effort. Your HR should be about 10-20 beats below AT. You should not feel a big burn in your legs and you should not feel breathless but you should feel like you are working. Ok, lets check your cadence Great, now hold this effort and focus on your technique. You are in control of this race. Smooth round pedal strokes: lifting through the back of the stroke, pushing through the top, scraping mud off your shoe on the bottom. Relax your upper body, shrug your shoulders up and then drop them toward your hips, keep soft elbows ... your elbows should point toward the ground, not out. You should not look like a bulldog when you ride.

This position puts less stress on your shoulder joints and neck and the bonus is that it makes your triceps, or those sometimes stubborn muscles on the back of your arms, do the work. Excellent. (I talk more in this first effort about technique and cue them about how they should feel at each stage of the interval more, then if there is time I am silence for a minute before preparing them for the next effort.) OK, are you ready, we are going to kick it up a notch by adding resistance but maintaining this 90 cadence.

Song #4 Mixtress, DJ Baby Anne, 5:41
Zone 4 for the first 3+min
Zone 5 for the last 2+ min

And here we go. Remain focused on your technique. As you add resistance, it is tempting to get into a push, push, push stroke. Keep it smooth. Take your effort up to just below AT. You should feel almost breathless but not quite.

(At 1 min, invite them to take a short saddle break by saying) Ok, we can see a couple of athletes up ahead and we are gaining on them. This feels GOOD! Lets take an enthusiastic saddle break without surging because these athletes are “coming back to us” we do not need to pick it up yet. Go ahead and gear up enough to stand and come out of your saddle nice and smooth. Control your effort so that it remains just below AT. Excellent, now smoothly return to your saddle and maintain that 8 effort. (Hold them in the saddle for one more minute with little or no talking and then ask them...)

Are you ready to push through your last two minutes above AT! We will stay in the saddle as we drive through the end of this TT. Count down 5,4,3,2,1. (At the 3 minute mark, the music tempo should accelerate.) With the same resistance, take your cadence up to about 100 and hold it. Remember, form comes first. Hips are strong and stable in the saddle. This final effort should hurt as you push into zone 5! Your legs should burn, you should be huffing and puffing. Excellent!

Recovery #1: 5 min

Song #5: Swamp, Talking Heads 5:16
Zone 2

Now, back off your resistance to about 3 and maintain a cadence of 80- 90. Take this time to hydrate and reflect of your performance. Did you hold back enough in the first half? Did you hold back too much? Did you push to above your AT in the last two minutes? How can you improve your performance on the next effort?

Now that you know exactly how this interval will go, on the next TT I want you to think about an actual race. Imagine your opponents shoulder to shoulder with you. Are your family and friends there? What makes you surge with adrenalin? Is it the knowledge of the upcoming pain? This adrenalin is what makes it hard not to go out too fast.

The next course will be on a steady hill Now you know exactly what to do. Since you are warm, you are more relaxed. Are you ready for your second time trial?

Time Trial #2: Steady Hill Climb 10 min

Song #6: Sapphire, Thunderball, 4:59
Zone 3

Add enough resistance to stand and once again to overcome the inertia of starting a race and get your heart rate up to zone 3. OK, lets go. (After about 20-30 have them sit back into the saddle) Take your resistance back so that your cadence is between 60-80. You should feel the hill in your legs, your resistance somewhere between 6 and 7. Lets do a cadence check ... count ... Remember, your effort is hard but not burning.

(Remind them) Pay attention, keep your stroke smooth on this hill. Silence for a minute or two.

Holding back can be very challenging, athletes may be passing you or pulling ahead, You must remain confident in your ability to chase them down later. You will not make the mistake of going out too fast. They will come back to you.

As the next song begins, we will bring our effort up just below breathless or zone 4.

Song #7: Unstoppable, E.S. Pothmumus, 3:04
Zone 4

Ok, we are going to make a move. You can see an athlete up ahead and you can feel that you are gaining on them. I want you to add enough resistance to stand on this hill and come out of the saddle surging ahead (not an attack, just a surge). Hold for 1 minute. Excellent, now come back into the saddle, lighten up the resistance a bit but maintain the same level of effort. Stay focused. It is tempting to take a little break when you come back into saddle after standing. Smooth round pedal strokes, relaxed upper body. After about a minute, ask them to add it back on and stand again for the remaining zone 4 effort. Excellent!

Song #8: Riots, A.R. Rahman (Slumdog Millionaire) 2:02
Zone 5

It is time to kick it up another notch, add resistance and/or increase your cadence a bit. It's time to push it through these last 2 minutes. Push it as far as you are comfortable! You have 5 whole minutes to recover when you are done. You should be breathing hard, forcing air out of your lungs, this should hurt! Awesome!

Recovery #2: 5 min

Song #9: Fun for Me, Moloko, 5:08
Zone 2

Now, come back into your saddle and back off your resistance to about 3 and take your cadence up to about 90. (Allow them to catch their breath and then say ...)

(Use the next songs to say the following.)

Now that you have had 2 opportunities to practice this 51/49 concept, I think you have got it down. So I am going to challenge you a little more, just to keep you on your toes. The next TT will be on a rolling hill terrain and at the start you will have to practice keen awareness and self-control to keep your effort down to a zone 3. Then you will have to practice discipline to increase your effort as we will come into some flat stages. It will be more tempting to go out too hard, but you are skilled and you are up to the challenge. Are you ready? Excellent! Lets Climb!

Time Trial #3: Rolling Hills 10 min

Song #10: Kiss Me Twice, Parov Stelar 4:44

Zone 3

Add enough resistance to stand and come up out of the saddle. No burning, no breathlessness, just consistent work. (Mostly quite, hold them there for 1:30) Come back into your saddle and lower your resistance a bit, maintaining your effort THIS IS NOT RECOVERY. Your cadence should be around 80. (Mostly quite again, hold them there for :30 and then lead them through a series of 16 count jumps or switchbacks for the remaining 2 minutes by saying ...) OK, now we are faced with a series of short switchbacks that go very steep, not so steep, very steep, no so. You ready. Lets start with steep. Now adding enough to stand, come on up, excellent, now back into your saddle, lower resistance a little if you need. Remember, effort is still zone 3.

Song #11: Breathe, Prodigy 5:35

Zone 4 for first 3 min

Zone 5 for last 2 min

We are now coming onto a flat section of this course for a couple minutes. Our challenge will be to raise our intensity on this flat road. Take your resistance back a bit and your cadence up to about 90. You are at your half-way point so it's time to bring it up to zone 4!

(Quiet, for remaining. Just let them ride for 2 min then say ...)

We are approaching another short but steep hill, stay in zone 4 as you power up this one. After this hill we will push into our final 2 min in zone 5.

Nicely done, come back onto a flat road as you bring your intensity UP! We have, one more flat and one last steep hill to the finish!

Add enough resistance so that you have to come out of the saddle on this hill. Lets go! I'll race you to the top! Excellent, excellent work!

Cool-down: 10 min

Song #12 Con Mi Sombra, S-Tone Inc. 4:45

Song #13 Babylon, David Gray 4:23

Take your resistance down to about a 3 and your cadence up to about 80-90. (Let them recover a bit and then acknowledge them) That was awesome! You should feel really good about what you accomplished today. Not only did you strengthen your aerobic system and burn a whole lot of calories, you practiced a skill that makes the difference between a good performance and a record-breaking performance. You fine-tuned your body awareness and hopefully you can walk away having learned a few things about training like a pro.

51/49 Negative Split Drills

Quick Profile

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Training Type: Negative Split Time Trial Simulation

Working Zones: Zone 3 through Zone 5

Cycling Specificity: 5

Total Class Length: 60 minutes

Warm-up: 10 min

Song #1: Introduce workout

Song #2: 3 x :30 Leg surges

Time Trail #1: Flat Road

Song #3: Stand for first :30 and then remain in the saddle with a 90 Cadence (Zone 3, Effort Hard)

Song #4 / First 3 min: Add resistance, maintain 90 cadence. Take a :30 saddle break after 1 min. (Zone 4, Effort Harder)

Song #4 / last 2 min, increase cadence to about 100 on the same resistance. (Zone 5, Effort Hardest)

Recovery - Song #5: 5 min Zone 2

Time Trail #2: Steady Hill Climb

Song #6: Seated hill climb except for first :30 to overcome inertia and get the heart rate up to mid zone 3. (Zone 3, Effort Hard)

Song #7: Stand on hill for 1 min, sit on hill for 1 min and stand for last min. (Zone 4, Effort Harder)

Song #8: Remain standing on steep hill climb. (Zone 5; Effort Hardest)

Recovery - Song #9: 5 min Zone 2

Time Trail #3: Rolling Hills

Song #10: Climb out of the saddle for 1:30 then 20-30 second switchbacks on 16 count (Zone 3; Effort Hard)

Song #11 / First 3 min: Flat road for 2 min, steep hill for 1 min (Zone 4)

Song #11 / Last 2 min: Flat for 1 min, steep hill for last minute (Zone 5)

Cool-down 10 min: Song #12 & 13

51/49 Negative Split Drills Playlist

Warm-up

One, Bruno From Ibiza, 5:46

Body Language / Interpretation, Booka Shade, 5:00

Time Trial #1 Flat Road

Rail Yard, Junkie XL, 4:37

Mixtress, DJ Baby Anne, 5:41

Recovery

Swamp, Talking Heads, 5:16

Time Trial #2 Steady Hill

Sapphire, Thunderball, 4:59

Unstoppable, E. S. Posthumus, 3:04

Riots, A.R. Rahman, Slumdog Millionaire Soundtrack, 2:02

Recovery

Fun For Me, Moloko, 5:08

Time Trial #3 Rolling Hills

Kiss Me Twice, Parov Stelar, 4:44

Breathe, The Prodigy, 5:35

Cool-down

Con Mi Sombra, S-Tone Inc. 4:46

Babylon, David Gray, 4:23

All the music is available on iTunes.