



Audio Master Class Spin-ups and Accelerations Cadence Drills

Created by Jennifer Sage, ICA Master Instructor
Training Type: Skill development, leg speed
Working HR Zones: Zone 3-5a
Total Class Length: 60 minutes

Profile Objective and Intensity:

This is an educational, challenging and fun profile, one in which you will be teaching your students a lot while encouraging them to focus on their technique and on fast legs. The objective of this ride is to teach students how to accelerate quickly through a wide range of cadences. It is not necessarily a “power building” class, which require would very quick accelerations with a big gear/high resistance. However, that would be a great class to follow up this one with, after they’ve already learned how to increase cadence in a smooth manner.

This is a leg speed workout. It will likely raise the heart rates of most students, perhaps into anaerobic ranges, especially those lack pedaling skills and who tend to be very jerky in their pedal strokes. The resistance chosen will have a tremendous effect on the ultimate intensity. It’s possible to do this profile and stay predominantly aerobic (except for perhaps a few segments) or with slightly higher resistance, easily head into the anaerobic ranges. Your coaching will dictate which way you want them to go. (Note: this profile is written and recorded with a higher intensity in mind.)

The best way to introduce this type of workout is to have already spent some time with your students exploring flat road cadences. The ICA Audio Master Class *A Cadence Ladder 80-100rpm* is a perfect choice. After you teach the Cadence Ladder, let everyone know you will follow it up with another class that will build on what they learned. Tell them everything will make so much more sense, and that they will have a sense of accomplishment when they can take those skills and apply them to speedwork. It is probably best to schedule these two workouts a week or two apart.

Music and measuring cadence

As in the previous ICA profile on cadence, I use music to set the cadence. However, that profile has you holding the same cadence throughout the song - except perhaps the final one at 100rpm for those students who find that cadence too challenging. For them, you would do it in intervals. This profile however, will ask students to increase their cadence from 80-100 rpm (and beyond) very quickly, so therefore, you will have to ride off the beat of the music. But I still use the beat of the songs as benchmarks for the cadence, sometimes at the beginning of the range, sometimes in the middle, and sometimes at the top end.

Cadence meters are obviously the best solution for a profile like this, but I have successfully taught this many times without them, by coaching my students to be very gradual about their increases. Metronomes just do not work well in this instance, except just for you, the instructor

to see, so you can set the leg speed for your students to follow. In that case, you will want a metronome that can be changed quickly. But you will find that you'll be fine without one.

This is what I do when I do not have cadence meters. I will start with an 80bpm song, let them experience what that cadence feels like. Then I'll take my ipod and advance to one of my 100bpm songs and play a short segment (about a minute), letting them feel the rhythm. I normally don't ever do this with songs on my ipod, but it works well for this profile just to give them a taste of that 100rpm. Of course, if you have cadence meters, this isn't necessary. After they've felt both the 80 and 100rpm, I start my 80bpm song and begin my drills as outlined in the profile.

The first drill with the 80-bpm song goes from 80-85-90-95-100-95-90-85-80rpm, 30 seconds at each cadence.

Then I will put a song that is 90bpm, start at 80rpm. We pass through the 90rpm (the beat of the music becomes a benchmark for them) then continue to 100rpm, and then back down, stopping briefly at 90 and then back down to 80.

Then I will put a song that is 100bpm. Again we start at 80rpm and gradually increase to 100rpm. Over the course of the class I do these in shorter and shorter increments, until we

The final two songs we will reach cadences of up to 110-115bpm. This depends on the skills of your students. I have a group of older riders who struggle with anything over 100rpm, so with this group I only do very short periods up to 110 maximum.

Variety

As an Indoor Cycling Association member, you received the eBook How to Create Profiles as a bonus for joining ICA. In that eBook, I discuss the process for creating your profiles, by drawing them out in a notebook first. When I did that for this profile, it went on for many pages with the many options I had in mind! You can take what I have outlined for you in this profile and put them together in many variations. What you end up doing depends on the skills of your students. You can make it harder by adding more resistance as you progress through the drills. You can add standing segments for your more skilled students. I don't recommend standing for long when the cadence goes much above 90 or 95rpm. I do several standing segments in this profile, and I have found them to be very challenging for my students. A good challenge is one thing, but if they cannot maintain proper form when standing, and end up leaning on their hands, they will not benefit from the drill and instead risk injury and/or disappointment. Watch your students carefully if you plan to add standing spin-ups.

Pedaling technique tips for higher cadences

Please read the description for faster cadence techniques in the Cadence Ladder 80-100rpm audio profile. It will help you with students who have a big challenge pedaling faster.

Note: the coaching cues for this Audio Master Class are assuming that you do not have cadence meters. If you do have them, you can modify the cues as needed.

Spin Ups and Accelerations

Warm-up: Not Real (In the Mood mix), Moonbooter, 88bpm 6:20

Explain the goal of the training session. Raise the HR to Zone 2 by the end of the song.

Last week we did a cadence ladder on a flat road from 80-100 rpm. For some of you it might have been an eye-opening experience as you recognized how challenging it can be to pedal with good technique at higher cadences, while not relying on the flywheel.

Today we are going one step further. We are going to run through that range, from 80-100rpm quickly, in 5-rpm increments. 80-85-90-95-100. We will start with 30-seconds at each cadence, then 10 seconds, then faster and faster, until you are going from 80-100 over 5 seconds. These are called spin-ups in the cycling world, and accelerations when you increase the leg speed very quickly. They teach you how to be very smooth in your accelerations, and ultimately, become more efficient at doing them.

Once you get good at doing these spin-ups seated, I will have you stand up for a couple of them. That will be very hard. We will only go from 80-90rpm and back down, but you will be working extremely hard for those!

Then guess what...we will go even faster! My fastest song is 112bpm, so we'll do a handful of very quick spin-ups to 112rpm, then hold it there for 15-20 seconds, then back down. And for the BIGGEST challenge of the day, I'll ask you to stand for the first half, then sit and increase your legs. Ouch!

The other thing we will do is gradually increase the resistance over some of the accelerations, so you can expect to work pretty hard today, probably above your threshold for short periods.

Remember, as always you have the freedom to take short saddle breaks and slow your legs down when you stand.

Alright...let's accelerate those legs!

Dance of Soul, Bosstronic 80bpm 6:02

As I explained, we will pedal from 80-100rpm. But how do you know what rpm you are at? Well, it won't take you long to learn what each level feels like. This song is 80bpm, so pay close attention to what your legs feel like right here. This is the only 80bpm song I have, they all get faster after this, so inhale that rhythm into your legs. As you pedal at that 80rpm, I want you to find a resistance that seems moderately easy, so that you can keep the resistance and raise your cadence against it. But I don't want it to be too easy. Make sure you feel the resistance pads touching the flywheel (or if you have gears, cue accordingly).

Now, I'm going to play a short 1-minute segment of one of my 100bpm songs so you can feel that as well.

(Change song to a 100bpm song on your ipod or cd, and just let them feel it for about a minute. Ask them to "inhale that rhythm" as well.)

Without changing the resistance, grab that beat and pedal at 100rpm. It should feel challenging without being overwhelming. If it is too much, then you've established a resistance that is too high to start with, although remember as you warm-up, it will become easier. Since we will be traveling from 80-100rpm, you need to be at a gear that you can keep without changing it during the spin-up.

After a minute, restart the 80bpm song

OK, so now you've felt the floor and the ceiling. Once we start the spin-up drill, I'll ask you for a gradual 5rpm increase every 30 seconds. Keep in mind that it doesn't have to be exactly 5rpms, we're looking for a smooth transition between a moderately slow flat-road cadence of 80rpm to a fast flat road of 100rpm – all in the same resistance/gear if possible. You can follow my legs if you are not sure. I know these cadences pretty well (or tell them that you have a metronome that you are following)

The first spin-up is a test so you can see what it feels like at each cadence level, and so you can verify that you indeed have a good working resistance that isn't too hard, and not too easy. You ready? Is everyone at 80rpm? In 15 seconds, we start increasing, and hold it for 30 seconds.

3 -2 -1 now take it up a tiny bit.

(Increase to 85rpm)

Watch my legs...

(After 30 seconds, increase to 90rpm).

It's not a big difference from 80 to 85rpm, nor is it a big difference from 85 to 90rpm. But it IS a pretty big difference from 80 to 90, so be very subtle as you increase, and see if you can notice that subtle change.

(30s, increase to 95rpm)

95. This will start to feel pretty fast to many of you. Relax your legs. Let your shoulders sink down, relax your arms. Relax your face. All this helps your legs to move the way we need them to move – without tension, without hindrance.

(30s, increase to 100rpm)

100rpm. Now I want you to hold this for 1 minute. Over the next 50 minutes, you will become very, shall I say "intimate" with this cadence in today's ride! Learn to love it!

Hold for 1 minute, then go back down the ladder, but this time in 15sec increments.

It's helpful to call out the cadence as you go down, letting them know they are "passing through" 95, 90, and 85. Once you get back to that 80bpm rhythm of the song, it will feel more comfortable.

Everyone add a little resistance and stand up and stretch your legs.

So how did that feel. That was the first spin-up. The next one, we will cut it down to an increase every 10 seconds.

Ankunft, Sternenspringer 90bpm 7:44

As soon as the song starts, ask them to stay at 80, though once the beat starts it is 90bpm. Ask them to avoid riding to the beat just yet.

This song is 90bpm, so this time we will pass through that rhythm on our way up the spin-up. Ready to start in 15 seconds? Same thing, just one-third of the time at each level.

Take them through a spin-up, spending 10 seconds each level. As you pass through 90, ask them to listen for the beat of the song, which will let them know if they are on track with the cadence. Once at 100rpm, hold for 30sec, then come back down and hold 30 seconds. I usually come back down a little quicker, calling out the cadence in 5-beat increments. The complete up-and-down ladder will take about 2 minutes. Once you come down, let them stand up for 30-45 seconds at 80rpm. Have them look at where their resistance knob/gear was before they stand, so they know where to return to start the next one.

Now we are going to cut that in half. Yes, that means only 5 seconds at each cadence level. So I'll just call out the cadence every 5 seconds. I don't want you to jump quickly from one to the other; rather I want you to be constantly moving smoothly from one to the next.

Reach down and add a little bit of resistance here – just a hair! I want you to be able to get through all of these. We go in 10.... 5-4-3-2-1.

Start at 80...85...90...95...100.

Now hold for 30 seconds...

...Back down. 95---90---85---80.....

Hold for 30 seconds.

Now, turn up your resistance a little more (IF it's available to you), and let's go back up... 80...85...90...95...100. Hold 30seconds. Then back down.

That should have brought your HR up!

Repeat a 4th time. They may or may not be able to add resistance. Those 4 spin-ups (including the 30seconds each at the top and bottom) should take about 1.5 min each, although depending on the fitness of your students, you may have to give them more of a break. Recover the last 2 minutes of this song, letting them stand and jog to stretch the legs.

Phew! You guys are great. And I know you probably want to stand up. But with what we are doing next, you might beg me to let you sit down, because we're going to do some spin-ups standing! Yes, standing. It will be quite a challenge...

Mandala (New Edit), Chronos 90bpm 8:00

Ready to stand up at this cadence? Here is how we are going to do this. We are only going from 80rpm to 90rpm. You'll be very glad for that! You'll first add a bit of resistance, then stand, then go up from 80-90 quickly, then hold for 15 seconds, then back down. I'll give you a seated break between the first two, but after that, you are going to try to do three standing spin-ups in a row. Let me warn you – you will be breathing hard!

The number 1 rule is to have enough resistance. Too little and you'll be bouncing all over the place. It will push your HR too high but without the benefits to your pedal stroke or to your technique. The number 2 rule is – QUALITY before QUANTITY! Form comes first. If your form falls apart, or if in order to stand you have to lean on your arms – un unh....that's a no-no! Better to sit one out if you need a break! No one says you have to do all of these.

Before we go, first look at where your resistance knob is right now, because when you sit back down, you'll immediately go back to this resistance and try to recover there. IF you cannot recover, then go ahead and turn it down even more. But at least give it a try.

Instructors, you have 8 minutes for these standing spin-up drills. How many you do, and how much recovery you give them, totally depends on the fitness of your students and their technique. Make sure you let them bring their hands to the sides of their bars as they stand for balance and comfort. Do not ride in “hand position 2” – that only causes students to want to stand up too tall or to put too much pressure on their wrists. At the “top” of the spin-up, you can stand at 90rpm for 15, 20 or even 30 seconds if your students are very fit. You may want to increase it by 5-10 seconds for each one. You may decide to sit back down at the 80rpm for a 30-60 second rest, and then stand again for the next one.

The rhythm of this 90bpm song is perfect for this drill, because they will let their legs eagerly rise up to the beat and hold it, then they will be relieved to let them slow down. Do as many as you want, or can, but make sure they get time to recover. Do not tire them out excessively, because you are only halfway through the class. During these standing spin ups, use some of the following cues:

Bring it up to 90rpm over 5 seconds. Now hold here for 30 seconds. To keep your form, keep your hips centered over pedals, where the crank arms attach to the bike. Do not lean on your hands. But also do not stand up too tall, do not unfold at the hips – no perching on fingertips in this class! Ride the bike like a real bike.

You may need up to 2-3 minutes recovery; in that case, work for 5 minutes then use the end of the song for recovery.

Renegade Soundwave (Leftfield Remix), Leftfield, 99bpm 5:44

You guys recovered? If not, then keep your resistance low for the first of these spin-ups, or sit a few out if you need to. We are going back to the seated spin-ups, but this time, we will accelerate even more quickly. You will accelerate fairly quickly from 80-100 over about 10 seconds. We'll hold at the top and bottom for 15 seconds. You'll do 3 of these, each one with a little more resistance. So find a resistance right now that will allow you to increase two times. Ready, 5-4-3-2-1. Take it up!

Since these come quickly, announce “80...90...100” 5 seconds apart as you go up the ladder. At the top simply say, “hold here, relax, breathe”, then after 15 seconds, go back down, and hold 15 seconds at 80rpm. Do this 3 times, each time adding just a little resistance. You'll need to recover and give them an easy saddle break out of the saddle at the end.

Altered State (Kumharas 6 Full Version), Asura 100bpm 7:47

This song takes a little while to get going. Use that time to recover, and stand up and jog if needed. More accelerations to 100rpm, and a little beyond, are coming.

Have them start at 80rpm.

Next, we will accelerate from 80-100rpm in about 5-6 seconds. I won't have time to call out each level, but that beat is calling you – the beat of the song is 100bpm. We'll quickly move to the beat, then hold for 30 seconds, then back down, hold for 30seconds, then go back up. We'll do that 3 times. As an option, you can add a little more resistance IF it's available to you. Not everyone will want to. Ready? We go in 5-4-3-2-1...

Take them through 3 sets. That should take about 1:10 each one. Use short cues, like “breathe”, “melt into your saddle”, “release the tension in your hips”, “let the legs work like they are meant to” to help them achieve this goal. After 3 sets, stand up for a saddle break.

The next set will incorporate some standing segments, being half standing, half seated. This will be hard, so make sure they know the standing is optional.

This time you will first raise your resistance a bit, then stand from 80-90rpm over 4-5 seconds, and hold for 10-15 seconds. Then you'll sit back down, release that little bit of resistance you added, and continue accelerating to 100rpm and beyond! The standing part is optional – if it's too much for you, please stay seated.

*Ready, let's go. Turn it up a little, stand up, and let's take it to 90rpm quickly
....hold 10 seconds.*

Now sit back down, back off a little gear, and keep the legs accelerating to 100 – right to the beat of the song.

Hold for 15 seconds.

Now, ready....take it higher! Just a little faster than the song, to 105rpm.

Hold 10 seconds....

GREAT! Now back it down gradually. All the way to 80rpm.

You will have time for perhaps two of those half standing/half seated accelerations to 110rpm. They should take about a minute or so each. Incorporate some recovery afterward. Save some energy for the final assault to 112rpm...

Yello, Celsius, 112bpm 6:02

OK, guys, if you thought that was fun, wait until you hear what you're about to do! First of all, this is optional. Some of you may need to recover some more. You might try just one of these – it's totally up to you. What are we doing? We're going to 112bpm! For some of you this will be too fast. If you bounce in the saddle Do NOT Go There! It doesn't do you much good if you keep pedaling while bouncing – far better to work the last cadence you can manage with good form, than to pedal too quickly with poor form and not get the neuromuscular benefit. Are you OK with that? Good, let's get started.

This song is 112bpm. Start at 80rpm. You all remember that very well by now, right? We will accelerate to the beat of the song (112rpm) over 8 seconds, so you'll cover over 30rpm in that short time span. Then you'll hold 15 seconds. Then we'll back down quickly and do 3 sets. Ready? 5-4-3-2-1 and Go!

Again, take them up and down three times, always cueing for form, to relax the upper body as the legs work, to relax their faces to not grimace and to breathe into the work. Some might only do 1 or 2.

Cool Down

Duotechnolique, Abakus, Abakus Beyond the Fields 4:17

Maja, Cantoma, Buddha Bar X Disc 1 4:15

What d'you think? Hard? But fun! Never underestimate the power of drills like these. You are improving your technical skills as a rider. With these newfound technical skills, when we start to do some sprinting and explosive power work, you will now have the skill to do them much more smoothly and with more control. They will make you a much better outdoor rider, but also a better indoor rider.

Your legs might zing a little later today or tomorrow. You'll remember me – just make sure not to take my name in vain, ok?! You used your muscles very differently than you do on a climbing or even a flat road profile.

Lead them through a cool down and stretch.

Spin-ups and Accelerations

Quick Profile

Created by Jennifer Sage, ICA Master Instructor
Training Type: Skill development, awareness
Working HR Zones: Zone 3-5
Total Class Length: 60 minutes

Warm-up – 6-8 minutes

Announce the purpose of the class, to improve their skill in gradually accelerating their legs from 80-100bpm, and beyond. Most will be seated, but some will be standing. Take saddle breaks as needed.

Song 1 80bpm 6min

Spin-ups from 80-100rpm, 30 seconds at each level. Do once or twice.

Song 2 90bpm 7:45

Spin-up 80-100, 10 seconds at each level. Hold 30sec. Back down (a little more quickly), hold 30 sec. Repeat 4X, adding a little more resistance each time (if they can). Stand and jog to recover at the end.

Song 3 90bpm 8min

This one you will stand and accelerate. Spin-up 80-90bpm over 5 seconds, hold for 15 seconds, and slow back down. Repeat 3-5X. Depending on skill and fitness, you may need to add recovery in between. You can also increase the length of the hold at 90rpm from 15-30 or 40 seconds. Make sure to include recovery at the end.

Song 4 100bpm 5:44

Spin-ups seated, 80-100 over 10 seconds. Hold 15 sec, then go back down, Repeat 3X.
Recover

Song 5 100bpm 7:47

Accelerate from 80-100rpm over 5-7 seconds. Hold 30 seconds, then return to 80. 3X.
Then do the same, but stand from 80-90rpm (add resistance) hold 10 seconds, then sit (remove the extra R) and continue accelerating to 100, then to 105rpm. Repeat. Not all students should stand. Make sure to recover.

Song 6 112bpm 6min

Spin-up seated 80-112rpm over 8-10 seconds. Hold 15 seconds, then return to 80rpm. Repeat 2-3X. Some students may need to sit these out.

Cool-down/Stretch 8 minutes

Spin –Ups and Accelerations Playlist

Title, Artist, Album, bpm, length

Not Real (In the Mood mix), Moonbooter, Elected Pieces 6:20 88bpm

Available from the artist for free at www.moonbooter.de

Dance of Soul, Bosstronic, Dreaming Angle 80bpm 6:02

Itunes

Ankunft, Sternenspringer , Kontakt, 90rpm 7:44

Available from the artist for free at www.sternenspringer.de/music

Mandala (New Edit), Chronos, Steps to Great Knowledge, 90bpm 8:00

eMusic

Renegade Soundwave (Leftfield Remix), Renegade Soundwave, RSW 1987 – 1995, 99bpm 7:50

eMusic, Amazon

Altered State (Kumharas 6 Full Version), Asura, Kumharas Ibiza vol 6 “Special Entire Tracks Edition, 100bpm 7:47

eMusic

Celsius, Yello, Spinning Vol 1, 112bpm 6:02

Spinning.com

This song is awesome for this drill, but it may be hard to find. Spinning may no longer have original volumes remaining. It can also be found on the Yello album Pocket Universe which is also out of print. Two other options are Running to the Light, by Runrig, on the Day of Days album. It is 112bpm, 5 min long. Available on Amazon as an album. Or, Liquid Journey, by Waterjuice, on Liquid Journey. 113bpm. 6:22. Available on eMusic.

Duotechnolique, Abakus, Abakus Beyond the Fields 4:17

eMusic

Maja, Cantoma, Buddha Bar X Disc 1 4:15

eMusic