INDOOR CYCLING ASSOCIATION

Master Class

Tempo Tantrum

Created by Tom Scotto, ICA Master Instructor
Training Type: Cardiovascular Fitness
Working HR Zones: Zones 3–4
Total Class Length: 60 minutes

Profile Objective and Intensity:

Wait, before we even dive into the profile, what is this "tempo" you speak of, Tom? That is a great question. If you do a search on the web for "tempo riding" you will see many definitions and even some arguments (shocking!). Heck, you may even disagree with how I'm going to describe it.

For those who have watched the Tour de France on TV, you most likely heard the popular commentators, Phil Liggett and Paul Sherwen, say, "The peloton [the main field or group of cyclists in a race] is riding at tempo." OK Tom, stop teasing us and tell us what tempo is.

In a 5-zone training method, Zone 3 is often referred to as tempo. It is a pace that is aggressive, steady, and can be held for a long period of time. How long? That's another argument…
It depends—your typical non-competitive cyclists can often hold a tempo effort from 30 to 45 minutes, whereas trained competitive cyclists can sustain tempo for 3 to 4 hours (not a typo).

Some ways to define/describe tempo:

- Between your endurance pace (Zone 2) and your threshold (LT2/VT2).
- 70%–80% of your maximum effort (not maximum heart rate)
- Breathing is strong, rhythmic, and sustainable
- A fast flat road below threshold (not be confused with climbing at tempo)
- Requires a focused effort to avoid retreating to a lesser intensity

Some benefits of riding at tempo:

- Increased cardiovascular fitness
- Increased adaptation to sustainable efforts (stimulus = duration, not intensity)
- Increased muscle glycogen storage
- Increased mitochondrial density
- Increased stroke volume from your heart

Power, Sustainability, and Efficiency

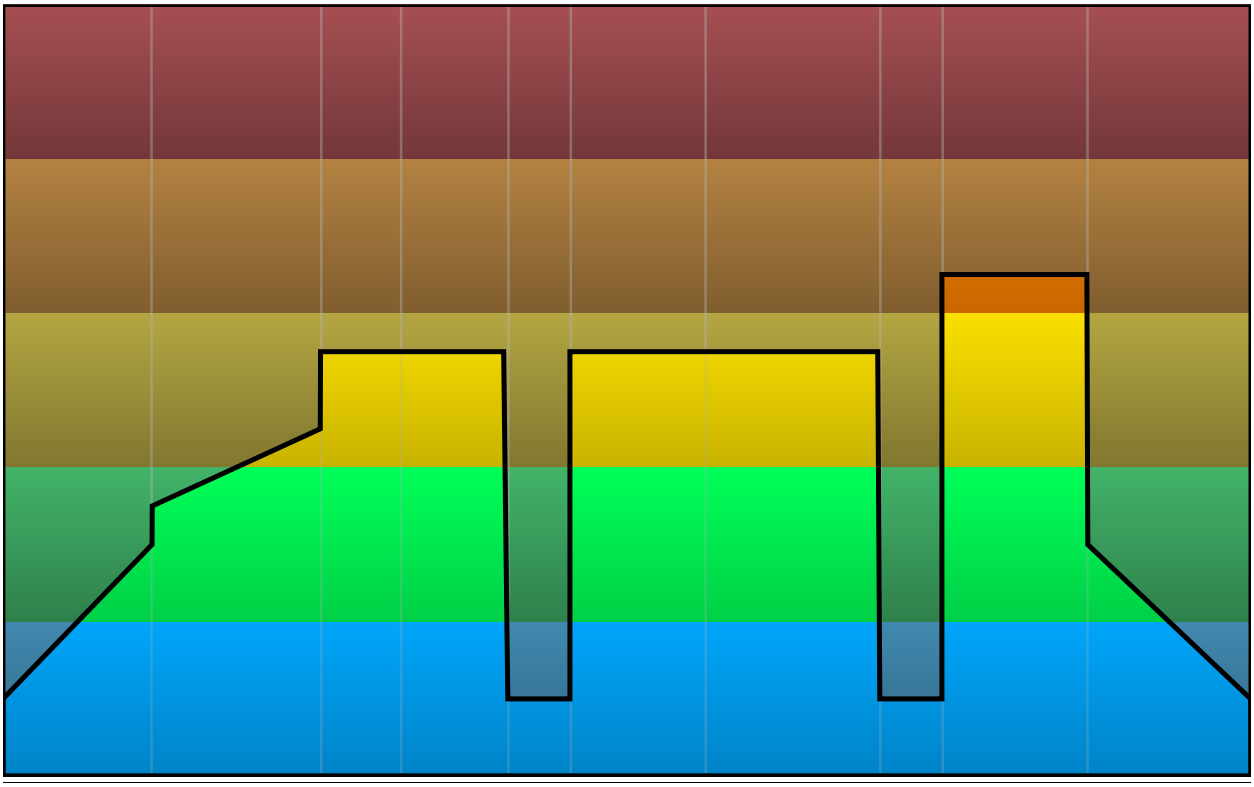
The ideal leg speed for tempo efforts falls between 90 and 100 rpm. Keep in mind that a main element of tempo efforts is sustainability (stimulus = duration) at an intensity above an endurance pace (Zone 2 or 60%–70% of your maximum effort). By nature, these efforts will provoke and require a greater emphasis on the cardiovascular system. The muscles of the legs are not on holiday, but our goal is to fight off the effects of muscular fatigue to sustain the effort longer. At the same effort level, cadences under 90 rpm (60–80 rpm) will place greater torque

(stress) on the muscles of the legs, causing them to fatigue faster. A cadence between 90 and 100 rpm will reduce the stress (torque) on the legs, while the faster leg speeds are more conducive to producing higher power output. Hence power, sustainability, and efficiency.

Music and Timing

I have all of the efforts (loaded/added resistance and standing) timed to the rhythm and structure of the music. I believe this makes the ride more engaging. If you are also into this approach, I have included all of the times within each segment.

Graphic Profile
(Provided by Class Builder™)



Coaching

Intro / Warm-Up
drEams, Zero One, 7:12, 80 bpm
Spout the usual pre-flight information: intro, zones, form, hand positions, safety, etc.

Cyclist or not, everyone wants to condition their cardiovascular system. In order to do this, we need to stress our body in a way that promotes a higher level of aerobic fitness. This is different than the interval-based training you may be accustomed to. Interval training often encourages higher intensities. Our focus will be on a combination of intensity AND duration.

You may think this workout is going to be easy because we are not going to venture into Zone 5 (90%–100% PE). However, if you take the time to learn and "endure" these efforts correctly, you may be singing a different tune by the time you are done (if you can breathe).

The name of this ride is "Tempo Tantrum." We are going to focus on riding at tempo. What is tempo? There are a number of definitions depending on the circumstances, but for today's focus, we are going to target Zone 3, which is an intensity between your endurance effort and upper threshold (VT2/LT2). Expect your breathing to be strong, rhythmic, and sustainable.

You should find an intensity where you know you can ride harder, but wish you could go easier.

In addition to your attention to intensity, we will be focusing on cadences between 90 and 100 rpm. This is ideal to enable us to maintain the highest power [capitalize on this if you have bikes with power meters] while fending off muscle fatigue in the legs.

Don't worry, we are going to start at a slightly slower cadence of 80 rpm to allow you to gradually bring your speed into play, while showing you the difference higher cadences can make (the good and the ugly).

If you are uncomfortable standing for multiple efforts, for longer periods of time, or at all, do what you can. Feel free to stand when you can or just stay in the saddle. If you decide to stay in the saddle during the standing efforts, continue to experiment with the amount of resistance you can handle while rising slightly above and returning to tempo.

Warm-Up Continues—Observe and Learn
Saraswati (Kumharas 6 Full version), Elea, 8:08, 80 bpm
Since the class is still warming up, this is a great opportunity to experiment with a few shorter efforts as we attempt to identify Zone 3. If the bikes in your class display power (watts), this is an opportunity to observe the power generated at 80 rpm in Zone 3.

> *During the next 8 minutes we are going to continue warming up while we explore intensity, cadence, [and power].*
>
> *Keep in mind that developing and sustaining higher leg speeds requires training. As we start with a cadence of 80 rpm, you need to determine whether sustaining a leg speed of 90–100 rpm will be practical. If leg speeds of 90–100 rpm drive your heart rate too high, the effectiveness of the workout will be greatly diminished. The music for all of our working efforts contains the target leg speed. However, work at your own pace and speed. Find a combination of speed and intensity that allows you to remain in Zone 3.*
>
> *First we are going to bring our intensity into Zone 3. Then we are going to experiment with adding more resistance for a short period of time AND then standing for a short period of time to see how it affects our target heart rate.*
>
> *If you are observing your power (watts), during our loaded (added resistance) tempo efforts, look for a 20- to 40-watt increase in power. Any more than this may cause you to exit Zone 3 too quickly.*
>
> *During the standing efforts, observe your power output (if available), your heart rate (if available), and the increase in perceived effort (PE).*
>
> *Our goal is to observe our ability to move slightly above a tempo effort (high Zone 3 to low Zone 4) with the ability to return to tempo, while also confirming that what we have defined as Zone 3 is accurate (not to hard or too easy).*
>
> (Riders should have been at tempo in Zone 3 during your dialogue.)
>
> *Now let's try adding a bit of resistance and sustaining it for 1 minute. Observe your power, heart rate, and perceived effort/exertion. If you drift into Zone 5, you have added too much.*
>
> [After a minute] *Now back off the resistance and return to tempo. How long does it take? Can you return to tempo?*
>
> *Now let's try keeping our resistance the same and standing instead. Since you are riding seated with enough resistance to maintain a Zone 3 effort, it is assumed that you have enough resistance on the bike to support your body weight as you stand.*

IMPORTANT!!! When you stand, the goal is to maintain an 80 rpm cadence. Let's do it! We are only going to remain out of the saddle for 30 seconds. What happens to your power, your heart rate, and your perceived effort?
[After 30 seconds] *Let's return to the saddle and our tempo effort and see if we can settle down again.*

(Repeat both of these efforts again if time permits.)

Tempo 90–95 rpm
Fury, Feint, 3:52, 91 bpm
Paperchase, Muzzy, 5:11, 90 bpm
This is a 9-minute section. During the first song, riders will focus on adding resistance and then returning to tempo. During the second song, resistance will remain the same, but riders will stand for short durations. A 90–95 rpm cadence will be maintained regardless of whether additional resistance is added or riders stand.

Allow riders to work at slower cadences if necessary. If riders cannot maintain a 90+ rpm cadence, their heart rates may increase too high or they can become discouraged. Either result will greatly reduce the effectiveness of the workout AND cause riders in your class to feel unsuccessful. Instruct them to work at their own pace…literally.

The first thing we need to do is establish the cadence we are going to maintain for the next 9 minutes. Yes, I said 9 minutes. The target cadence is 90 rpm, but as I've said a few times already, find a leg speed that works for you.

Next, increase your intensity to Zone 3. Take note of your power, heart rate, and perceived effort compared to what you experienced at 80 rpm.

For the first 4 minutes, we are going to add resistance (load) and then return to tempo. For the last 5 minutes, we are going to come out of the saddle multiple times, returning to tempo after each one.

Stay calm. Keep it smooth. Keep it steady. Keep it strong. Keep it sustainable. Breathe!

Here we go…

Timing:

Song: Fury

- 0:47 – Load (20 sec)
- 1:06 – Return to Tempo
- 2:12 – Load (40 sec)
- 2:56 – Return to Tempo

Song: Paperchase

- 1:03 – Stand (20 sec)
- 1:25 – Return to Tempo
- 2:08 – Stand (20 sec)
- 2:29 – Return to Tempo
- 3:33 – Stand (20 sec)
- 3:54 – Return to Tempo
- 4:37 – Stand (20 sec)
- 4:59 – End

Recovery
Earth Orbit, Ashtech, 4:41 (Edited to 3:00), 71 bpm
Whether using heart rate or perceived exertion, encourage riders to recover as much as they can. Ideally we want them to return to Zone 1, but this may not be possible until their fitness improves.

This song is our recovery theme for class. Whenever you hear it, it is time to back off and recover in order to perform your best during the next tempo section.

You have 3 minutes to recover. If you have a heart rate monitor, track how many beats your heart rate recovers each minute. As you improve your fitness, not only will you be able to hit and sustain higher heart rates, but your heart rate will also recover quicker.

(Explain the next section.)

Tempo 95–100 rpm
Clean That Too, Trotter, 6:32, 100 bpm
Ape to Angel, Pitch Black, 8:26, 97 bpm
Similar to the first tempo section, we will explore both loaded and standing efforts. However, we will bump the cadence to 100 rpm.

It is time to get back to business. Let's start by establishing our target leg speed, which is 100 rpm or a cadence you can sustain for the next 15 minutes. That's right, not only are we increasing the target leg speed, but the duration as well. I'm a slave driver!

Next, increase your intensity to Zone 3. Take note of your power, heart rate, and perceived effort compared to what you experienced at 80 and 90 rpm.

For the first 6 and a half minutes, we are going to add resistance (load) and then return to tempo. For the last 8 and a half minutes, we are going to come out of the saddle multiple times, returning to tempo after each one.

CAUTION: The standing efforts are going to be closer together so pay attention to your heart rate. It is perfectly acceptable to skip efforts in order to remain as close to tempo as possible. Remember, this ride is not called "Tempo Tantrum" for nothing. ☺

Stay calm. Keep it smooth. Keep it steady. Keep it strong. Keep it fast. Keep it sustainable. Breathe!

Here we go…

Timing:

Song: Clean That Too

- 0:33 – Load (20 sec)
- 0:54 – Return to Tempo
- 1:18 – Load (20 sec)
- 1:38 – Return to Tempo
- 2:26 – Load (20 sec)
- 2:45 – Return to Tempo
- 3:05 – Load (40 sec)
- 3:43 – Return to Tempo
- 4:00 – Load (30 sec)
- 4:30 – Return to Tempo
- 5:12 – Load (20 sec)
- 5:31 – Return to Tempo
- 5:41 – Load (40 sec)
- 6:19 – Return to Tempo

Song: Ape to Angel

- 1:20 – Stand (20 sec)
- 1:41 – Return to Tempo
- 2:00 – Stand (20 sec)
- 2:20 – Return to Tempo
- 2:40 – Stand (20 sec)
- 3:00 – Return to Tempo
- 3:20 – Stand (20 sec)
- 3:40 – Return to Tempo
- 4:00 – Stand (20 sec)
- 4:20 – Return to Tempo
- 4:50 – Stand (20 sec)
- 5:10 – Return to Tempo
- 5:30 – Stand (20 sec)
- 5:50 – Return to Tempo
- 6:30 – Stand (10 sec)

- 6:40 – Return to Tempo
- 6:50 – Stand (10 sec)
- 7:00 – Return to Tempo
- 7:10 – Stand (10 sec)
- 7:20 – Return to Tempo
- 7:30 – Stand (10 sec)
- 7:40 – Return to Tempo
- 7:50 – Stand (10 sec)
- 8:00 – Return to Tempo
- 8:10 – Stand (10 sec)
- 8:20 – Done

Recovery
Earth Orbit, Ashtech, 4:41 (Edited to 3:00), 71 bpm
Whether using heart rate or perceived exertion, encourage riders to recover as much as they can. Ideally we want them to return to Zone 1, but this may not be possible until their fitness improves.

> *You have 3 minutes to recover. How much can you recover in 1 minute…2 minutes… 3 minutes.*

(Explain the next section.)

Tempo—Load vs. Standing
Get Low, Dillon Francis & DJ Snake, 3:34, 100 bpm
Turn Down For What, DJ Snake & Lil Jon, 3:34, 100 bpm
The last 7-minute section alternates loaded and standing efforts, as well as some individual efforts that combine load and standing.

> *We have arrived at our final 7-minute tempo section. We are going to end on a high note, by keeping the target cadence at 100 rpm while alternating and combining loaded and standing efforts.*
>
> *The foundation of our workout has not changed. We are still focused on sustaining a Zone 3 effort and maintaining a steady cadence (regardless of the speed you choose), both in and out of the saddle.*
>
> *During the first half of this section we are going to alternate between loading and standing. Take note of as much as you can to determine the effect of each of these challenges on your tempo effort.*
>
> *During the last half of this section we will first load resistance for 20–30 seconds and then stand while maintaining both cadence and load. So much fun to be had.*

Stay calm. Keep it smooth. Keep it steady. Keep it strong. Keep it fast. Keep it sustainable. Breathe! Did I mention breathing?

Here we go!

Timing:
NOTE: I've created a seamless mix with these two songs, so my cues are based on a combined time of 7:02. I'm assuming my timings will be obvious once you listen to the music. ☺

- 0:57 – Load (40 sec)
- 1:35 – Return to Tempo
- 2:32 – Stand (40 sec)
- 3:10 – Return to Tempo
- 3:48 – Load (20 sec)
- 4:07 – Stand (20 sec)
- 4:26 – Return to Tempo
- 4:45 – Load (20 sec)
- 5:04 – Stand (20 sec)
- 5:24 – Return to Tempo
- 5:43 – Load (30 sec)
- 6:12 – Stand (30 sec)
- 6:41 – Return to Tempo
- 7:00 – Done

Final Thoughts
Many riders may have thought this ride would be on the easy side, but have experienced an epiphany, possibly as soon as the first tempo section. I find it helpful to get an idea of how riders rate the overall difficulty of a ride on a scale of 1 to 10.

What was the most difficult aspect of the ride?

Ask riders what difference they noticed in power, heart rate, and perceived effort between the different cadences, and loaded and standing efforts.

Music Profile

Section	Music	BPM	Time
Intro / Warm-up	drEams, Zero One	80	7:12
Warm-Up Continues Observe and Learn	Saraswati (Kumharas 6 Full version), Elea	80	8:08
Tempo 90–95 rpm	Fury, Feint Paperchase, Muzzy	91 90	3:52 5:11
Recovery	Earth Orbit, Ashtech	71	3:00*
Tempo 95–100 rpm	Clean That Too, Trotter Ape to Angel	100 97	6:32 8:26
Recovery	Earth Orbit, Ashtech	71	3:00*
Tempo Load vs. Standing	Get Low, Dillon Francis & DJ Snake** Turn Down For What	100 100	3:34 3:34
Cool-down / Stretch	Calabi Yau, Tripswitch	90	7:53

*Earth Orbit has been edited to 3:00 from 4:41.
**Used MixMeister to create a seamless mix between Get Low and Turn Down For What.