INDOOR CYCLING ASSOCIATION

2015 Tour de France Package

Stage 6

Abbeville / Le Havre

Created by **Bryon Black**
Training Type: **HIT, Windy Conditions Simulation**
Working HR Zones: **Zone 2 to Zone 5b**
Total Class Length: **60 minutes**

Profile Description

This profile is different from our traditional terrain-based profiles in that it deals with a natural element that is invisible yet very real when encountered by the TDF peloton*: the wind*. While the wind is a part of every TDF stage, it can invisibly yet decisively shuffle the GC (General Classification) leaderboard in a manner similar to a trip up Alpe d'Huez.

Stage 6 of the 2015 TDF has the potential to bring a significant time advantage or time deficit for the Tour's GC contenders. You can use the techniques described in this profile in any coastal stage where wind will likely be a factor.

This stage from Abbeville to Le Havre will travel along the Normandy coastline, and will encounter gusty winds that can quickly change direction. While there are a few small climbs in the route, there will not likely be much difference between the energy expended there than on the gusty head- or crosswind segments.

These windy sections are exploited by savvy teams, where cross- or headwinds can shatter the peloton, leaving GC contenders in the front group steamrolling toward a large time advantage by

the end of the stage, or forcing those unlucky GC contenders that do not make the front group to scramble to limit their losses and save their chances for a podium in Paris.

There is an axiom in bike racing that says:

> *"The race is won by the rider that spends energy at the right time, not the rider that spends the most energy."*

I mention this bike-racing rule now because it is apropos to a windy stage like this.

In order to conserve energy, racers will use a technique called drafting in a paceline. The lead rider in a paceline is pedaling "into the wind," and most of their effort (energy) is spent on moving their body and bicycle through the resistance of the air. The riders behind tuck in close in the "hole" or wake of the air created by the lead rider. The riders in the draft can expend 20% to 40% less energy than the rider on the front. When riding in a TDF-size peloton of 190+ riders there are many places where a bike racer can hide, which enables them to conserve energy.

Most riders will take turns pedaling on the front of the peloton, cutting through the wind and then rolling off of the front of the pack and back behind the front line, where they draft until their turn to sit in the wind comes up again.

The teammates of TDF team leaders (GC contenders) will take turns sitting at the front cutting a hole in the air for them. The team usually keeps their team captain off the front of the pack, allowing him to sit in the draft all day and conserve energy for a more critical time in the race.

Drafting is prevalent in other types of racing like auto racing, motorcycle racing, and horse racing for the same basic reason: letting someone in front of you do most of the work saves you energy. For sports like swimming and triathlon, drafting is not allowed.

There are three basic categories of wind.

- Tailwind
- Headwind
- Crosswind

The tailwind is a magical thing; our bikes and bodies become like sails. The wind gives us and bikes a free push down the road. There is almost nothing better than a good tailwind. You notice that there is no sound; all the air noise disappears. Your pedals turn with ease; you feel fast and your bike feels like it is gliding effortlessly.

The headwind is the polar opposite of a tailwind. All the joy and freedom we feel in a tailwind is reversed in a headwind. It requires substantial effort, so we have to spend extra energy to overcome the added resistance. In many ways it is similar to riding up a hill, but the "hill" is invisible and endless. For many riders, a headwind can be oppressive and demoralizing.

The crosswind is perhaps the most prevalent wind condition encountered in the TDF peloton. When you factor in turns and changes in direction of the road, riders experience wind hitting them from a variety of angles. Crosswinds can help as well as hinder forward progress. If you have a cross-tailwind you might get a nice push down the road, or if you have a cross-headwind, you will probably be gritting your teeth while muscling your way to your destination.

We often think of wind pushing on us in a very literal way from the side. But in actuality, the wind does not so much push on us than swirl around us. So instead of shoving us (like another person pushing us out of the way), wind swirls around us, so we might get a shove from the wind from the right side and then a little back draft of a shove on the left side as the wind swirls to the other side. Since we are balancing on the two wheels of a bike, this can make pedaling very challenging.

Dealing with the different types of wind requires different riding techniques. For tailwinds, one simply pedals and enjoys the free push as long as the favorable wind prevails. Tailwind breakaways are very rare in TDF stages. It is nearly impossible for a breakaway to be established in a tailwind since the peloton can easily chase down any break that might get established. When the peloton has a tailwind it generally means a nice, fast free ride for everyone involved.

As mentioned earlier, headwinds are arduous, energy-sapping challenges that strike fear into the heart and soul of many a solo rider. The rider will basically pedal steadily with sustained power into the teeth of the wind. By getting lower on the bike by lowering their head and keeping arms and elbows down, it will help them cut a hole into a headwind section. On a road bike like those used in the Tour de France, hands will be in the drops of the handlebars. Riders on a TT bike will drop into the aero position with their elbows on their aero bars. (Except for time trials, aero bars are not allowed in a road race since they are unstable in a group.)

Solo riders will keep a steady, quick cadence by picking a gear that allows a cadence of 90 to 100 rpm, with frequent shifts up or down a gear to help keep legs fresh and turning over. For long headwind sections, intensity is maintained just below lactate threshold. If the section is short and the rider knows he will change directions in a mile or so, then he may ratchet up the intensity to get past the headwind as soon as possible.

Headwinds encountered by the peloton are a different situation. Since the peloton basically shares the workload through the use of drafting, headwinds are far less scary. Each team will put their *domestiques* in front of the GC contender/team leader, who then sits in the draft four or five wheels (bikes) deep, safely out of the wind. The risk for any rider in the peloton is getting dropped out of the draft in a headwind section. If that happens they have a serious issue since they may not get back to the group until the wind direction changes. They will certainly lose time and will also spend a significant amount of extra energy trying to catch up. In other words…don't get dropped from the pack!

Headwind breakaways are also rare in Tour stages since it takes a tremendous amount of energy to open up a gap on the peloton against this extra resistance. If they are lucky enough to succeed, a headwind breakaway of perhaps ten riders would have to do a significant amount of work to stay away, while the remaining peloton of 180+ riders continues to drill a hole into the headwind

and share the load across several dozen *domestiques*. The advantage goes to the side with the greatest numbers.

Crosswinds encountered by the peloton can be broken into two different types. First, there is the run-of-the-mill crosswind that happens during every moment of every stage. These are the normal breezes and small unobtrusive gusts that come and go along the road. These crosswinds are encountered and swallowed up without issue by the peloton.

Then there is the stronger gusty, sustained crosswind. When the peloton encounters these stronger crosswinds, mental alarm bells will sound, signaling danger and a significant amount of pain and suffering ahead. Erratic crosswinds have the ability to shred the peloton apart, creating gaps of wind between each rider.

With a crosswind, drafting behind the lead rider is no longer effective. In order to draft, the peloton forms what is called an echelon, with riders drafting off the side of the rider in front. For example, in a crosswind coming from the left, the front rider takes a direct shot of wind on their left side, and the subsequent rider will tuck in just to the right of the front rider, the next rider will then tuck in just to the right of the second rider, and so on. The front rider will take a short pull into the crosswind and then pull off down the backside of the echelon, protected from the side wind. The second rider then moves over to the place of the lead rider and takes a dig into the wind, and the rotation of riders is repeated so everyone in the rotating echelon paceline takes a full pull into the crosswind and then gets shelter while others take their turn.

In the TDF an echelon in strong crosswind conditions will completely stretch across the road surface. This becomes problematic since the roadway is only so wide and there is only room for so many riders in any given echelon. If there is no more room in an echelon, then riders who are left out are faced with a choice: ride on the side of the road (not likely), start a new, separate

echelon, or face the strong crosswind solo. Regardless, once the front or lead echelon is full, riders who aren't in it are certain to lose time. How much time? That depends on a couple of factors. How long does it take to organize a subsequent echelon? What is the make-up and how organized is the echelon? If it takes 30 seconds or a minute to organize a second echelon of small climbers and only a few *domestiques*, and they don't work or rotate very efficiently, it could be that the second echelon could lose several minutes in a long crosswind section.

Once a split has occurred in a crosswind section it is unlikely that the chasing echelon group will pull back the lead group. Why? It takes far too much power/energy to bridge through a 20 mph crosswind and make up lost time.

You can see how crosswinds and echelons can wreak havoc on a team's strategy!

Even getting into an echelon can take a substantial about of energy. From my own experience, in a 25 mph crosswind it took a maximal effort for almost a minute to bridge a gap of only 50 feet and join onto a well-organized rotating echelon paceline. Once in the group I did not want to get spit out and face the prospect of another maximal effort just to join in again.

This is the reason why mental alarm bells sound when riders encounter a crosswind. Savvy teams will know about a potential crosswind section and amass their biggest, most powerful riders to the very front of the peloton along with their GC contender in an effort to be in the very first echelon and to put large amounts of time on their less savvy, less aware competitors.

Techniques for riding in crosswinds are fairly straightforward. For solo riders it is similar to a headwind: quick, steady cadences and stay low on the bike. For the peloton it is all about finding an echelon to stay sheltered from the wind. No one wants to go solo in a crosswind in a race. They will certainly lose way too much time and expend too much energy.

Breakaways that form as a result of crosswinds quite often succeed and are rarely chased down unless the road changes direction. No rider has one ever won the Tour on a crosswind stage, but many GC contenders have damaged their chances to win the Tour in a crosswind. The riders that are especially vulnerable in the wind are the slight-of-build climbers; their small stature makes them less than ideal candidates for boring through the wind. It is the larger, more powerful riders that can sustain longer periods of time in a crosswind, like a time trial specialist or the larger, powerful *domestiques*.

Objective and Intensity

The objective of this profile is to simulate some of the conditions you would expect to find during a windy TDF stage such as Stage 6. Of course, wind is not a factor in an indoor cycling studio, but you could manufacture wind-like conditions by bringing some large fans into the studio. Since our bikes are stationary, fans would not accurately create the bluster of a headwind or crosswind, but they could create an interesting mental training perspective of always feeling the wind on the face or skin.

This profile will seek to simulate the intensity and mental toughness of riding into a heavy headwind for a long period of time. We will also simulate the surges of intensity needed to stay coupled to the draft of the rider in front, or when you are called to sit on the tip of the arrow and cut a hole in the wind for your teammates.

For the crosswind simulation we will add in some heavy, high-intensity surges. These surges will mimic the moments when we get detached from the echelon or when we face a big gust of wind that rattles the organization of the paceline. These moments are meant to simulate the alarm bells and a call to battle stations in the peloton during a crosswind section.

Intensity for the headwind and crosswind sections will be in Zone 3 to Zone 5. Typically in windy race conditions, conserving energy goes out the window and it becomes a battle of survival to hang on to the front group, or a battle to bridge back to the front group if you get dislodged or gapped.

The format of the profile is broken into to four distinct efforts. There will be two 10-minute headwind sections with intensities starting in Zone 3 and held in Zone 4 with a few surges into Zone 5. Each of these will be followed by a 4-minute recovery, imagining the road slightly changing direction and the wind easing temporarily.

There will also be two 10-minute crosswind sections where, in addition to holding the intensity solidly in Zone 4, there will be a series of high-intensity surges sprinkled into the mix. The surges are designed to be deliciously painful.

The recovery sections are only 4 minutes. Training convention states that recoveries should normally be equal to the effort of the work section, but riding in the wind in the TDF is not normal, so just like in the race the recoveries are minimal. It is time to throw down!

It is suggested that riders use a higher than normal amount of resistance to simulate the load of the wind. For example, if you are normally used to cruising on a flat road at 90 rpm, figure on

dialing up a big gob of resistance and getting your rpms down to a steady, leg-numbing 70–80 rpm. It should feel like a hill climb! Wind equals higher resistance and lower cadences. Don't be stingy with the resistance. It should feel hard to turn the pedals in the wind—your intensity will be driven more by resistance than pedal speed/cadence.

You can suggest that riders try to adjust their riding position by lowering their heads and upper bodies as if they are trying to duck under the oncoming wind. However, I am only talking about an inch lower, not simulating aero bars. *Don't go aero*, just ride like the pros and simply and mindfully lower your head and shoulders; this will become a challenge over a few minutes, very similar to riding into the wind on a real bike.

During all the windy sections, pedal with a devout steadiness. Cue your riders to establish a mantra, such as "I will drill my way through the wind." Tell them to repeat to themselves, "If I waver I move backward." The four windward efforts are supposed to be hard, so if any one effort does not feel tough, you will need to pedal harder against more resistance on the next one. Be bold and don't hold back!

All of the short surges, and especially those in the crosswind sections, are full-throttle efforts.

For the headwind section, drop in a few surges every few minutes, to simulate the peloton adjusting to the headwind. Because there will inevitably be gaps created, those gaps need to be closed down quickly. You can cue the ride, saying, "The wheel in front of you is suddenly moving away from you!" and "Jump and surge hard to cover the gap now!"

For each of the 10-minute headwinds, do at least four or five surges. I would also recommend that you vary the length of the surge effort. Make one 10 seconds, make another 20 or 30 seconds. For each of the 10-minute crosswind sections do eight to ten surges. Some can be very short 5- to 10-second very hard efforts, and some efforts as long as 15 to 20 seconds, or perhaps longer.

The idea is to introduce some randomness to the simulation. The wind is random and invisible, so our response to the wind will be random as well. Sometimes we will have to adjust to a wind change with a quick, punchy surge, and other times we might have to dig for all we are worth for 30 seconds or a minute. As the instructor, you have some freedom to make the ride profile your own by varying the length and power of the surges in each work section.

Use the following guidelines for the surges:

- For the headwinds make the surges hard, steady efforts.
- For the crosswinds make the surges brutally hard, punchy efforts that require maximal power.

Abbeville to Le Havre: Battling the Wind

The Warm-up

The warm-up is 8 minutes long. The idea here is to open up the legs and the body's energy systems in preparation to ride for 40+ minutes above Zone 3. Take the first 4 minutes riding in Zone 1, gradually increasing intensity to Zone 2. For the next 4 minutes, take the intensity up into Zone 3 and even low Zone 4 by performing 30-second leg speed efforts. The efforts can be either seated or standing.

During this section of the warm-up, coach students not to push too hard; just let the body come up to temperature so the legs start to feel warm. It is a gradual increase of intensity. Use a mix of cadence and resistance to raise intensity.

> *Focus on rolling at a comfortable cadence of about 90 rpm for the warm-up. Calm the mind and clear thoughts away.*
>
> *As the legs start to warm and open, gradually add on turns of resistance while keeping the cadence steady.*

At the end of the warm-up (last 4 minutes), students should be solidly in Zone 2 and could easily move up to Zone 3 as they press on their "gas pedal."

Explain the format of the four 10-minute windy segments. Tell your riders:

> *All the teams realize that with the forecasted heavy crosswinds along this coastal route, there will probably not be any successful breakaways. Instead, this stage is about surviving the pummeling winds.*
>
> *While in the head- and crosswinds think of keeping your engine revving at a high speed, feathering your energy throttle, steady and powerful during the steady parts and then wide open when the surges occur…!*

There will be mentally challenging moments during the surges, especially deeper into the 10-minute sections, where riders may want to ease up or check out due to cumulative intensity. For these moments, encourage riders to be resilient and strive to stay committed to completing all of the 10-minute sections of wind.

> *Don't give up! Keep moving down the road!*
>
> *The mentality you want to cultivate while riding in windy conditions is being able to apply your energy in a consistent manner while dealing with the random windy gusts. A good metaphor is the bamboo tree, which is very strong, stable, and resilient, yet has the ability to bend and be flexible in the wind.*

Headwinds

There are two challenging sections, each about 10 minutes long, using a solid amount of resistance to simulate the headwind. Work with cadences of 70–80 rpm and allow resistance to drive intensity.

> *Imagine turning a corner and suddenly being faced with a stiff, unrelenting wind in your face. That is what this is like. The road in front of you goes on for a few miles and there is no relief, no place to hide. The only option is to settle into a steady rhythm and hold high Zone 3/low Zone 4.*

Riders should expect to spend nearly all of the 10 minutes in the saddle. It is OK to get up out of the saddle on occasion to stretch the legs, but keep it short since you need to stay out of the wind. The resistance should feel heavy, as if there is a steady, unrelenting load on you and your bike. Have riders lower their heads and shoulders about 1 inch while riding in the headwind. Tell them that this is a similar feeling to riding in a real headwind, and getting lower on the bike is a necessity to make a smaller target for the wind.

In the beginning, let riders work for about 2 minutes to get their rhythm and cadences established. Then start to cue in some surges due to gusts of wind or changes in the speed of the peloton. The first few surges should be short, hard efforts that are steady changes in intensity. Cadences will rise to 80–90 rpm for the surges, along with an increase of resistance. Aim for 10 to 20 seconds for each surge, returning back to the original rhythm and cadence. Try not to make these surges overly "punchy" or drastically more intense—save those types efforts for the crosswind section later on.

After a few surges, you can begin to make them a little more aggressive by increasing the length of the surge, or have them occur more frequently. For example, you might surge for 20 seconds, followed by a steady section for 30 seconds and then a 15-second surge followed by a 45-second steady section. The surges will bounce intensity from Zone 3 up to Zone 4 or Zone 5. Intensities will likely increase as the number of surges accumulates. Ten minutes is a long time and the more surges, the higher the intensity will be for most riders by the end of the headwind section.

After the 10 minutes is completed, tell your riders they can slip back into the peloton to recover in the draft. They will return to Zone 2, dropping resistance and increasing their cadence during the 4-minute rest. Remind them to hydrate and reset their posture.

After the 4-minute recovery, repeat the second 10-minute headwind section with perhaps more surges. After working hard in the headwind, roll the group through the second 4-minute recovery section back in the peloton once again.

Crosswinds

The second half of the stage to Le Havre is right along the coast, with an inevitable blustery crosswind coming off the Atlantic, pummeling riders from the right. You will simulate it with two 10-minute sections. As with the headwinds, the goal is to use a solid amount of resistance to

simulate the crosswind. Look to work with cadences of 70–80 rpm. Resistance is what drives intensity, so don't be afraid to challenge riders to use plenty of resistance.

> *Like the headwinds you just experienced, the crosswinds are unrelenting and will be pushing on you for a substantial amount of time. There is no place hide from the crosswind; all you can do is pedal hard into the wind and ride the swirls of intensity as you get buffeted with gusts of wind. Your mission is to settle into a steady rhythm and hold high Zone 3/low Zone 4.*

As before, riders should expect to spend nearly all of the 10 minutes in the saddle since they need to stay out of the wind, and a strong gust can knock them off their bikes. Have riders lower their heads and shoulders about 1 inch while riding in the crosswind, as they did in the headwind.

After 2 minutes of establishing rhythm and cadence, start to cue some surges to simulate bracing against the gusts of wind, or due to changes in the speed of the peloton, or gaps that open up in the echelon in front of the rider. The first few surges should be short, hard efforts that are steady changes in intensity. Allow cadences to rise to 80–90 rpm for the surges, increasing resistance if needed.

These crosswind surges should be VERY hard, maximal efforts. You can do some of the surges out of the saddle to increase the effort and load. In a real race-condition crosswind, the riders will give everything they have to bridge and close a gap. Think hard, max effort out of the saddle, and then back to the saddle and rhythm once the gap is closed up.

In contrast to the steady nature of the headwind surges, the crosswind surges should be more aggressive, more frequent, and very random. We are striving to simulate the random characteristic of crosswinds, where gaps easily occur in the echelon paceline. Echelons are difficult to organize and difficult to keep running, due to cyclists riding at an obtuse angle to each other as opposed to sitting directly behind each rider. As the crosswind hits the echelon, little tunnels of air/wind constantly cause gaps between riders that need to be sewn up. If the gap is not immediately closed then the echelon is split and anyone behind the gap is now pedaling by himself until a new smaller echelon is organized. Tell your riders it is up to them to not allow any gaps to be formed!

After 10 minutes, imagine the road changing slightly so they feel a slight tailwind, allowing them to recover. Return to Zone 2, dropping resistance and increasing their cadence during the 4-minute rest. Remind riders to hydrate and reset their posture.

After the 4-minute recovery, the road turns again, and the wind slams the group once more from the side. Repeat the second 10-minute crosswind section with even more surges. Make them work hard and empty their tank in the final crosswind section.

It is your choice if you want to simulate a sprint finish for the final 2 minutes of the race, or just keep everyone's effort high through the end of the 10-minute crosswind section.

Perform a cool-down and complete the profile

Battling the Wind Playlist

Song Title	Time	Artist	Album	Source
Warm-up:	**8 min**			
8:07	8:07	Global Communication	76:14	iTunes
Headwind |Section 1:	**11 min**			
Dark and Long (Dark Train)	10:53	Underworld	Second Toughest In the Infants	iTunes
Recovery 1:	**4 min**			
Unknown Brother	4:01	Black Keys	Brothers (Deluxe Version)	iTunes
Headwind Section 2:	**~9 min**			
Kashmir	8:28	Led Zepplin	Mothership (Remastered)	iTunes
Recovery 2:	**4 min**			
End of Night	3:59	Dido	Girl Who Got Away	iTunes
Crosswind Section 1:	**10 min**			
Bigmouth	10:08	Underworld	1992–2002	iTunes
Recovery 3:	**4 min**			
Roots	3:55	The Roots	How I Got Over	iTunes
Crosswind Section 2:	**10 min**			
Rez	9:57	Underworld	1992–2002	iTunes
Cool-down:	**4 min**			
Wicked Game	4 min	Emika	DVA (Bonus Track)	iTunes
Total Time:	**60 min**			

