



Cycling Specific Training

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This training protocol is designed to provide you with a series of exercises and ideas on how to get the most out of your POWERbreathe, specifically focussing on the demands of cycling. All the techniques and exercises within this training protocol are intended as a guide and can be adapted and tailored to suit the abilities and requirements of the user.

Establish your correct training load/level: Before commencing POWERbreathe® training it is essential that you establish the correct training load/level on your unit. Comprehensive guidance can be found in the User Manual, and also the POWERbreathe® instructional DVD. As is the case with your normal POWERbreathe training you will be working towards completing 30 breaths. However in order to reach your 30 breaths, the exercises in this training programme will often be broken down into undertaking 3 sets of 10 breaths throughout the exercise.

If you find that completing 30 breaths is easy whilst doing the exercises, increase the training load/level and resistance by one turn. If you find the exercises too hard to complete, reduce the training load/level and resistance by one turn.

1) Using POWERbreathe® as part of your warm up and recovery

Pre-Training Warm-up:

Working on a load/level 1 ½ levels below your current training load/level, take 30 controlled breaths no more than 10 minutes before you begin your training.

Pre-Race Warm-up:

Working on a load/level 1 ½ levels below your current training load/level, take 30 controlled breaths immediately before you begin your warm-up prior to your race.

Current Training Load/Level	Ideal Warm Up Load/Level
Level 9	Level 7
Level 8	Level 6
Level 7	Level 5.5
Level 6	Level 4.5
Level 5	Level 4
Level 4	Level 3
Level 3	Level 2
Level 2	Level 1.5
Level 1	Level 0.5
Level 0	Level 0

POWERbreathe & Recovery¹:

After intense exercise, there is an accumulation of a metabolite called lactate in the blood. Lactate is produced by muscles when they work intensely, and it has been linked to fatigue. For many years, athletes have used active recoveries to get rid of lactate more quickly (when working at low intensities, muscles can consume lactate).

Breathing against a small inspiratory load immediately after exercise reduces lactate by 16%. What's more, unlike a normal active recovery which takes around five minutes to speed-up lactate clearance, inspiratory loading reduces lactate as soon as exercise stops. Furthermore, when using the inspiratory load, lactate

¹ A recent study has shown that the metabolite lactate is cleared from the blood more quickly if athletes breathe against a low inspiratory load during recovery¹.

concentration after just 5 minutes is equivalent to that achieved in 15 minutes during passive recovery.

This means that POWERbreathe® can be used as a recovery tool for any situation in which you want to get rid of lactate as quickly as possible to speed recovery.

Recovery set:

Adjust the load/level on the POWERbreathe® to 2 levels below your training load/level and breathe deeply and slowly against the load continuously for 5 minutes, or for as long as you have available.

2) POWERbreathe Body Conditioning Programme

The following exercises are to be introduced into a conditioning and training programme along side your other cycling specific training such as training time trails and hill work. These exercises are designed as a training guide and can be adapted to suit the performers needs requirements.

This Cycling specific POWERbreathe training protocol aims at improving leg strength and power as well as developing various upper body and core muscles. Areas of the upper body, including the abdominal muscles, are an integral part of the pedal stroke. A strong torso provides the rigidity to deliver maximum power from the quads to the pedal. On a level stretch, strong riders will barely move their upper body while those who are fatiguing will rock their pelvis on the saddle losing valuable energy.

Table X in section 4 provides an example of how these exercises can be integrated into a daily programme. These exercises are designed as a guide and can be adapted to suit the performers' needs and requirements:

(i) **POWERbreathe Back Squats**

Main Muscles Worked: Quadriceps, Inspiratory Muscles

Secondary Muscles Worked: Hamstrings, Calves, Lower back, Core

POWERbreathe Impact: Whilst developing leg strength and power for steep climbs POWERbreathe engages the core muscles further as you stabilize the upper body in order to lift the weight further strengthening the inspiratory muscles and enhancing breathing control.

Equipment: Barbell, POWERbreathe

Mechanics Type: Compound

Programme: 3 sets of 10 reps and breaths. Allow 30 seconds recovery between sets.



Coaching points: Set your POWERbreathe® to your training load. Inhale through the PB as you descend into the squat, then exhale as you explode up developing leg strength and power. Use this breathing pattern for one set, and then switch the inhale and exhale phases during the next set, i.e., Exhale through the PB as you descend into the squat, then inhale as you explode up.

By introducing the PB into this exercise it will engage important core and torso stabilising muscles to a greater extent, aiding in core stabilisation, as well as regulating your breathing control and development of inspiratory power. To make this exercise harder try introducing an unstable platform such as a Bosu ball, or stability cushion such as a Togu Dynair cushion (36cm) or XXL Sports cushion.

(ii) POWERbreathe Bent over Dumbbell Row

Main muscles worked: Back, Arms, Inspiratory Muscles

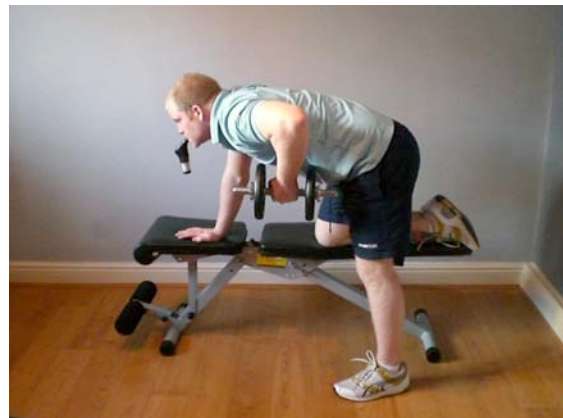
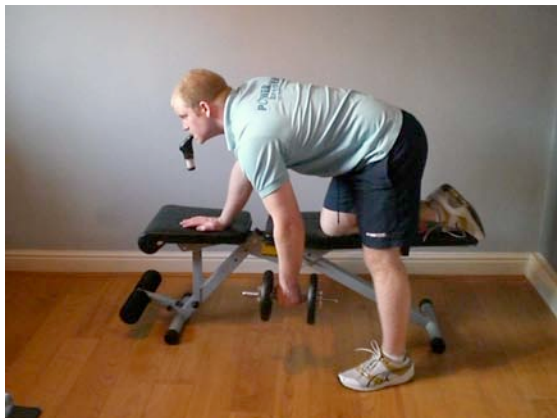
Secondary Muscles worked: Pectorals

The POWERbreathe impact: By training the inspiratory muscles in this position you are creating an activity specific training environment as you breathe through the POWERbreathe. In this body position you are closely replicating the posture of the body during a race situation bent over the handlebars placing similar demands of on the rib cage and diaphragm. By lifting the weight you are developing arm and shoulder strength to help stabilize the handlebars when pedalling hard.

Equipment: 2 x Dumbbells, Bench, POWERbreathe

Mechanics Type: Compound

Programme: 3 sets of 10 reps and breaths. Alternating arms as you go complete 5 reps and breaths and then change hands completing 10 reps this is one set. Allow 30 seconds rest.



Coaching points: Kneel over side of bench by placing knee and hand of supporting arm on bench position foot of opposite leg slightly back to side on the floor. Place your POWERbreathe in your mouth and grasp dumbbell from floor.

Looking forward bring the dumbbell up to your side until it makes contact with ribs or until upper arm is just beyond horizontal breathe in as you do this. Slowly breath out and return weight to start position or until arm is extended and shoulder is stretched forward. Leaning forward in this position you are training and developing the lung muscles specific to the postural demands of cycling. Repeat 5 times and continue with opposite arm until you have done 10 reps and breaths. Repeat three times.

(iii) Aero Bars

Main muscle worked: Inspiratory Muscles, Abdominals

Secondary Muscles Worked: None

The POWERbreathe impact: By training in this body position you are closely replicating the posture of the body during a race situation bent over the handlebars placing similar demands of on the rib cage and diaphragm. By training the inspiratory muscles in this position you are creating an activity specific training environment.

Equipment: You can use a bike and hunch over the handles as if sprinting or alternatively you can sit and lean forward on a balance ball as shown below.

Mechanics: N/A

Programme: Complete 30 breaths in this position.



Coaching Points: Take a seat on your balance ball or bike and place the POWERbreathe in your mouth. Lean forward keeping your hands tucked into your ribs. This position will put an extra demand on the lung muscles. To make this exercise harder place hands out in front, you will then have to counterbalance this extra weight making the exercise slightly more intense. Undertake 30 breaths in this position.

(iv) Kneel Balance and Breathe

Main muscles worked: Abdominals, Obloquies, Inspiratory Muscles

Secondary Muscles worked: Quadriceps

The POWERbreathe impact: This exercise develops core strength, balance, coordination and stability. By engaging the inspiratory muscles whilst in an unstable position you force the diaphragm and intercostals muscles to work hard as both breathing muscles, and core stabilising muscles.. This will build their ability to function effectively in both of these vital roles.

Equipment: Balance Ball, POWERbreathe

Mechanics Type: Compound

Programme: Hold the balance and complete 10 breaths this is 1 set, undertake 3 sets. Allow 30 seconds recovery between sets.



Coaching points: Start off by getting onto the Balance Ball as the picture indicates. As you rise up, force your knees into the ball and straighten the back (sometimes it is best to work with a partner in order to get you into this position alternatively use a wall to help steady your self). When you have found your balance point, place the PB in you mouth and complete 10 breaths. Complete this 3 times.

(v) POWERbreathe Super Crunch

Main muscles worked: Abdominals, Obliques, Inspiratory Muscles

Secondary Muscles worked: None

The POWERbreathe impact: By breathing against the POWERbreathe® whilst holding the crunch, you engage more core muscles, including the diaphragm and the intercostals as well as the obliques, transverse abdominus and rectus abdominus. This provides an intense and more holistic core development exercise whilst improving your breathing power, strength and endurance.

Equipment: Balance Ball, POWERbreathe

Mechanics Type: Compound

Programme: 3 sets of 10 crunches and breaths



Coaching points: Lie on a balance ball (Togu Abs Ball). Make sure that the roundness of the ball fits into the curve at the bottom of your back and spine. Keeping legs shoulder width apart and flat on the floor at all times. When comfortable move your upper body forward into a crunch position as in the

picture. Place your PB in your mouth and hold the crunch position then undertake 10 controlled breaths. When complete remove PB from your mouth and return to a flat position. Repeat process 3 times.

3) POWERbreathe® additional Training Applications

(i) POWERbreathe® Circuits:

This is an example of a training circuit that POWERbreathe could be integrated into. This circuit becomes progressively harder over a 6-week period. Allow only 1-minute recovery between exercises and repeat 3 circuits.

During the POWERbreathe stations undertake 10breaths on your normal training setting and adjust throughout the 6-week programme as indicated. Use weights that are about 30% - 40% lighter than you normally lift.

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6
Intensity	Low	Med	High	Low	Med	High
Stations						
Calf Raises	30 sec	30 sec	45 sec	30sec	30 sec	45 sec
Ab Crunches	20	25	30	20	30	30
Dumbbell Lunges	40 sec	50 sec	1min	40 sec	50 sec	1min
Push-Ups	40 sec	50 sec	1min	40 sec	50 sec	1 min
POWERbreathe Training	10 breaths	10 breaths	10 breaths (+1/2 a turn)	10breaths	10breaths	10breaths (+1/2 turn)
Side Throws	40 sec	50 sec	1 min	40 sec	50 sec	1 min
Squat Thrusts	40 sec	50 sec	1 min	40 sec	50 sec	1 min
No of Circuits	3	3	3	3	3	3

(ii) POWERbreathe® Intervals

Sprint Interval

The interval training session below is intended to build cardio respiratory endurance for Cycling. Built into the final stage of the Interval session is a PB station. This PB station is intended to further exercise the inspiratory muscles and also aid in the recovery process after the first phase of the circuit. Intensity level has been displayed as a % of max power output using Cycling Power meter.

Repeat this circuit 3 times and complete once or twice a week.

Intensity	Low	Med	High	Low
% of max Power Output	20%	50%	100%	20%
Duration	2mins	3mins	1mins	2mins
POWERbreathe				10 breaths

Develop leg power, strength and recovery during an endurance ride

POWERbreathe can be incorporated in the following way. During a long endurance ride lower your gear 2 to 3 gogs. Then for 30 seconds pedal hard at about 50 to 70 RPM. Repeat this 6 times throughout your ride. After your 6th session rest and set your POWERbreathe to 2 levels below your normal training load and breathe through the unit slowly for 5 minutes.

After your recovery session a second set can be repeated. Use POWERbreathe recovery for a further 5minutes after your second set.

Integrating POWERbreathe into an overall fitness programme

Table X: An example of how to fit these exercises into a training regime:

	Exercise 1	Exercise 2
Sunday	Rest Day	
Monday	PB Back Squats	PB Lunges
Tuesday	PB Circuit Training (Breathing station)	
Wednesday	Aero Bars	PB Super Crunch
Thursday	PB Interval Session TBC Kneel Balance and	
Friday	Breathe	Aero Bars
Saturday	Competition: Warm Up	Competition: Cool down

References

1. Chiappa GR, Roseguini BT, Alves CN, Ferlin EL, Neder JA, Ribeiro JP. Blood lactate during recovery from intense exercise: impact of inspiratory loading. Med Sci Sports Exerc 2008;40(1):111-6.