



Breathe in to Boost Performance!

How Training The Inspiratory Muscles Can Improve Performance For Football Players

The modern professional game of soccer is an extremely physically demanding sport and the players are amongst the best prepared athletes in the sport world today. Players cover approximately 10-12 km during the course of a match, which they do at an average intensity of 75-80% of their maximal oxygen uptake (VO₂ max.). They sprint for 3-5 seconds and cruise for 30-90 seconds throughout the 90 minutes of the game. Combine with this the need to demonstrate exception ball skills, the agility of a gymnast and the ability to make tactical decisions whilst running at full tilt, and you begin to appreciate the demands of the game.

Although most activity during a game is sub-maximal, the intermittent sprints that are integral to the game, are supra-maximal. This pattern of exertion places extreme demands upon breathing because these activities are anaerobic and generate high levels of lactic acid. Lactic acid stimulates breathing to increase as part of a compensatory strategy to overt fatigue of other muscles.

“Following a sprint, breathing is driven to its highest levels, inducing extreme breathlessness. If players are to continue to make an active and effective contribution to the game, their breathing must recover quickly” explains sports scientist and respiratory physiologist Dr Alison McConnell. “Fighting to ‘get your breath back’ is one of the most potent factors preventing a player from exerting maximal effort in the continuation of play. Our research has shown that training the inspiratory muscles using POWERbreathe® improves the rate of recovery during a repeated sprint test, so players take less time to recover and feel able to sprint maximally again”, explains McConnell.

Alison is an expert on breathing during exercise and, whilst based at Birmingham University, her research team developed a training device that specifically targets the breathing muscles - POWERbreathe®. You breathe in through the portable, hand-held device for 30 repetitions (this takes 3 minutes) twice daily, and the strength of your inspiratory muscles increases by around 30-50%. McConnell’s research team have also proved the ergogenic effect of the POWERbreathe in other sports, including cycling.

The demands of breathing during exercise are so high that these vital muscles experience fatigue during a match, ‘fatigue makes everything that much worse, because you have to use more effort to get your muscles to do what you want them to, so breathing feels even harder when your inspiratory muscles are fatigued’. POWERbreathe® can come to the rescue yet again, because strengthening your inspiratory muscles also makes them less prone to fatigue.

The breathing muscles are an integral part of soccer in less obvious ways than their role in breathing. “The breathing muscles are also essential for twisting and flexing movements of the trunk”, explains McConnell, “they make a contribution to stabilising and turning the trunk during kicking, as well as flexing the upper body during heading, so fatigue of the breathing muscles can affect more than your running ability”.

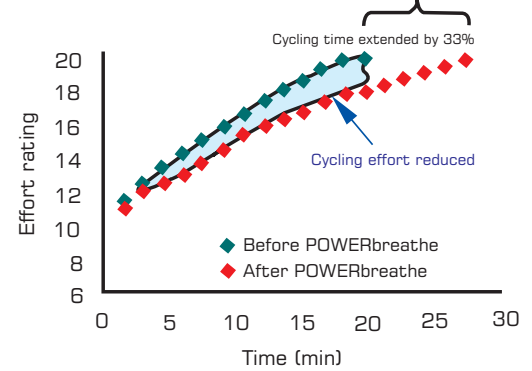


As well as helping players to recover more rapidly and avoid breathing muscle fatigue, inspiratory muscle training can be used as part of a pre-match and pre-substitution warm-up. "Our research has shown that normal warm-up routines fail to warm-up the inspiratory muscles. We experience this as a sense of increased breathing effort and breathlessness during the first few minutes of activity", explains McConnell, "by warming-up your breathing, you can avoid this phase and enter the match firing on all cylinders from the moment you step onto the pitch".

This technique is particularly helpful during substitutions where players are joining a match where everyone else is already warmed-up and there is no time for them to 'get into the game'. The England Rugby squad have been using the technique for some time and have found it extremely helpful. You'd think that something this good would require hours of devoted, excruciating effort, but you'd be wrong. The POWERbreathe® training protocol can be done in the comfort of your arm chair whilst watching MoTD and will be over long before it takes Alan Hanson to get bored with the sound of his own voice – training takes less than 3 minutes a day!

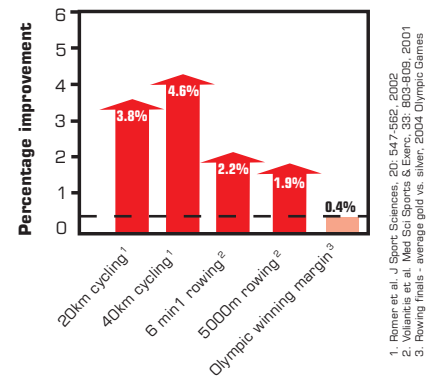
So if you want to start the match firing on all cylinders, maintain your electrifying pace throughout the game, and astound the opposition with the strength of your last minute headers, get into some heavy breathing and give POWERbreathe a try.

Improvements in exercise duration and effort sensation during fixed intensity cycling



From: Caine & McConnell, 1998

Improvements in time trial performance after POWERbreathe training



1. Ramer et al. J Sport Sciences, 20: 547-562, 2002.
 2. Ramer et al. J Sport Sciences, 20: 547-562, 2002.
 3. Rowing trials - average split vs. split, 2004 Olympic Games