



### **WHY EXERCISE WITH OXYGEN MAKES MANY PEOPLE FEEL BETTER**

By Dr. Robin Bernhoft, MD, FACS, DABEM, FAAEM

Thirty-five years ago, a German medical pioneer named Manfred von Ardenne began studying blood circulation at the capillary level. Therapies based on his discoveries have taken Europe by storm since the mid-1990s

Von Ardenne discovered that many factors influence blood flow in capillary beds throughout the body. Acute injuries, like car accidents, surgery, heart attacks or even the “flu” cause a sudden reduction in blood flow. Slower injuries like ageing or low-grade chronic exposure to toxic chemicals also reduce blood flow, but more gradually.

These changes are mostly reversible – even the ones associated with ageing.

According to von Ardenne’s research studies, sudden injury or chronic toxicity causes the precapillary sphincter (a ring of muscle surrounding the smallest arteriole, just before it enters the capillary bed) to tighten, decreasing blood flow to the capillary bed. This happens throughout the body.

When blood flow decreases, the sodium/potassium pumps in the cells lining the capillaries don’t get enough oxygen, so water accumulates in the cells, making them swollen. When they swell up, oxygen is less able to seep out through the thickened capillary wall to the cells nearby, so those cells have to run on less oxygen. That reduces energy levels, harms the sense of well-being and interferes with many metabolic functions.

This process occurs simultaneously throughout the entire body. Because the oxygen can’t seep out of the capillaries very easily, the body extracts less oxygen, and for that reason has less total energy to work with. This is one of the reasons energy declines with age, and why one feels so weak with the “flu.” Von Ardenne and his associates showed that the body’s ability to use oxygen declines gradually with age, and suddenly with the “flu.”

These changes can be reversed, as can the acute decline produced by other injuries like heart attacks, surgery, or car accidents, to mention only the three they studied in detail.

To do so, Von Ardenne developed Oxygen Multistep Therapy, in which extra oxygen is inhaled by mask, either while resting or during exercise. This approach does not change the amount of oxygen in the red cells, but it does increase the amount of oxygen dissolved in serum, and that small increase is enough to loosen the precapillary sphincter and allow increased blood flow, with increased delivery of oxygen to the sodium/potassium pumps in the capillary lining cells. Capillary wall swelling goes away, and oxygen is able to seep out into the surrounding tissues. Oxygen delivery goes up, thereby allowing the body to create more energy.

The process works much faster with exercise, but works well enough while resting.



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Von Ardenne's studies showed, with "flu" syndromes, for example, that the sudden decrease in oxygen use could be reversed with fifteen minutes of exercise with oxygen, and the reversal not only marked the end of feeling sick, but also seemed to speed recovery.

I tested this recently on myself.

One Sunday, I came down with the "flu" that my kids had been suffering with for a week. I went to bed, and lay around feeling sorry for myself, wondering how I was going to get through a week of seeing patients. Suddenly, around 5 pm I remembered Von Ardenne's work with "flu" patients. While the last thing I wanted to do was move, let alone get out of bed, let alone drive to the office and (God forbid!) exercise with oxygen, I decided to try it. The first few minutes on the exercise bike were sheer torture, but as I continued something happened: it suddenly didn't feel so bad, then it actually felt pretty good, and by the time I had gone 15 minutes with the oxygen mask on, I felt very good. I went home and the kids were amazed. Was I the same sick dad who had crawled out the car an hour earlier?

That was pretty much it for my "flu." I felt great the rest of the evening, and over the next few days had a very light headache, but otherwise felt fine.

Von Ardenne speculates that opening up the capillary circulation not only creates more energy, but also allows the white cells better access to the viruses and accelerates recovery. That is what his data suggest, and in my case, that is what it felt like.

The studies which have been done in Germany suggest similar outcomes with ageing (taking 80 year old couch potatoes and greatly increasing their energy levels and exercise tolerance), heart attacks, post surgical patients and accident victims. Each group showed significant increases in oxygen utilization after oxygen therapy, and maintained their increases for months afterwards.

Oxygen therapy also probably speeds most types of detoxification. It definitely improves peripheral circulation in most people, and is usually effective for acute exposures to toxic chemicals. Some people experience a "Herxheimer's" reaction when stored toxins are flushed out by improved circulation, but this is usually followed by an increased sense of well-being.

Oxygen Multistep Therapy is available in our Ojai office.