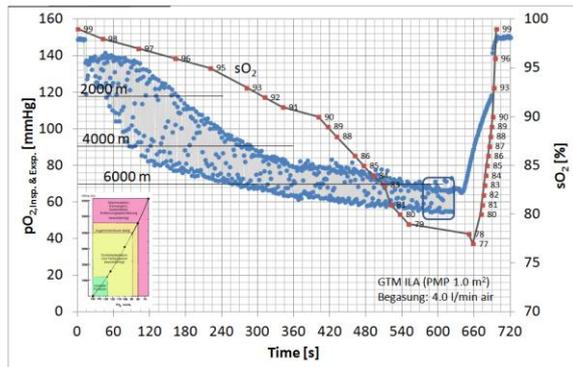


HypoxieFit

Altitude Training Device

Invention

Athletes, such as marathon runners and cyclists, often resort to training at higher altitude areas, in order to optimize their endurance. The atmosphere in such locations has lower oxygen content, which forces the human body to compensate for the reduced



Inspiratory and expiratory O_2 partial pressures and arterial O_2 saturation (sO_2) during an investigation with the elevation training device

an accurate adjustment of oxygen and carbon dioxide, which in turn does not allow the user to have regular and effective training sessions. This can be changed however, with the novel altitude training device presently introduced. **HypoxieFit** is based on technologies that stem from the field of heart-lung machines, and blood enrichment with oxygen. Oxygen and carbon dioxide content in the aspired air can be precisely adjusted by means of thin hollow fibers. Hence, carbon dioxide is effortlessly and accurately eliminated by diffusion, which renders the application of adsorbers obsolete. The absence of any filters and adsorbers in HypoxieFit minimizes airway resistance, making the use of it incomparably more pleasant. Furthermore, the attainment of precise values facilitates interval training sessions. The **HypoxieFit** has the potential to become an enrichment for every athlete; each training session being individually adapted.

The positive effect of repeated short-term oxygen deficiency on the human body has been presumed for a long time, and extensive research has been conducted on this topic. Its therapeutic effects are also being increasingly investigated. Thus, it is also expected to have a positive impact especially on chronic pulmonary diseases (e.g. COPD) and on cardiac system disorders (e.g. arterial hypertension).

Commercial Application

HypoxieFit comes in various designs for additional versatility. Simpler versions are suitable for home use, whereas the more complex ones can be used in fitness studios or therapy centers. Hollow fibers are provided in form of cartridges, for easier handling. HypoxieFit is also safe for amateur athletes, since it filters out carbon dioxide from air. Given that a short-term regular use results in a significant improvement in the oxygen transport in the blood, HypoxieFit can quickly contribute to a better fitness.

Current Status

A patent application was filed at the German Patent and Trademark Office. The US and EU patent applications have been admitted as well. We offer on behalf of the RWTH Aachen University licencing for the invention, and opportunities for further development of the technology to any interested parties. The first prototypes have already demonstrated the functionality and the efficacy of this technology.

An invention of the University Medical Center of Aachen (UKA)

Comparative Advantages

- Rapid improvement in fitness status
- Easy and safe to handle
- Reduction of O_2 content in ambient air combined with low CO_2 content
- Progressive (stepless) adjustment of the parameters
- Unaffected airway resistance
- Cost effective design

oxygen uptake by increasing hemoglobin concentration in blood. Thusly, oxygen transfer is improved, and consequently the performance in sports too. This kind of training is not a viable alternative for recreational athletes, who can't afford such costs. Commercially available products simulating high altitude training conditions, currently rely on the augmentation of dead space to achieve the desired effect.

In addition, adsorbers are employed in order to bind excess carbon dioxide, thus substantially increasing airway resistance. This kind of high altitude training devices do not offer

Contact:

Ref.-Nr.: 3208

Andreas Brennemann, Dipl.-Ing.

PROvendis GmbH

Schlossstraße 11-15
45468 Muelheim an der Ruhr,
Deutschland

Phone: +49 (0) 208 94 105 33

Fax: +49 (0) 208 94 105 50

E-Mail: ab@provendis.info

Web: www.provendis.info