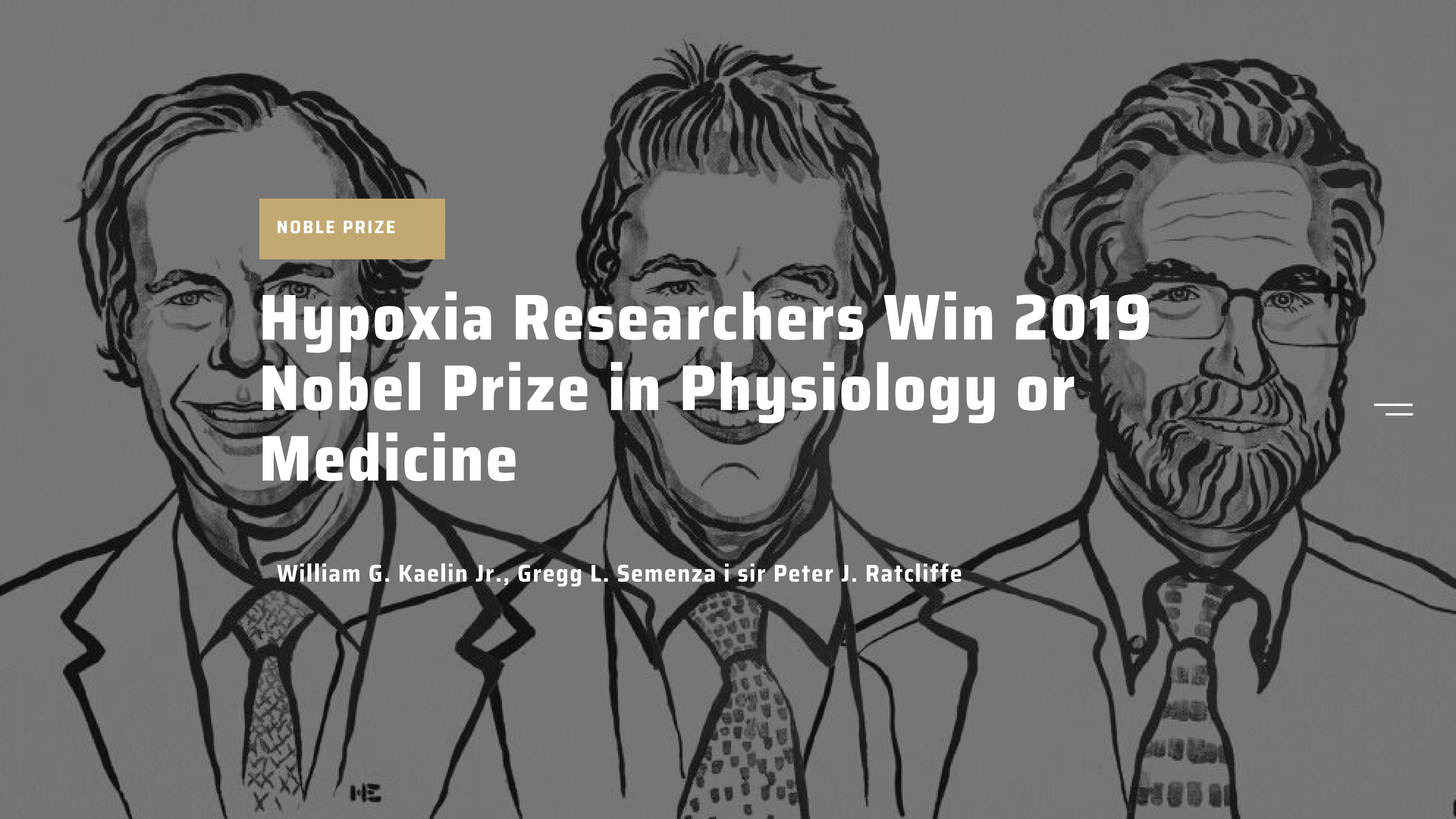
AIRSPORT

AIR SPORT

POLISH MANUFACTURER OF HIGH-ALTITUDE CENTRES



NOBLE PRIZE

Hypoxia Researchers Win 2019 Nobel Prize in Physiology or Medicine

William G. Kaelin Jr., Gregg L. Semenza i sir Peter J. Ratcliffe

AIRSPORT

AIRZONE

AIR SPORT - MANUFACTURER

AIR SPORT technologies have been developed by Polish scientists and engineers and include permanent rooms, mobile spaces, and tents in which atmospheric air is modified by lowering or increasing oxygen concentration.

AIR ZONE - TECHNOLOGY

That's what we call our high-altitude technology. AIR ZONE are modern solutions for many branches of business (health & beauty, sport, physiotherapy, military).

Introduction

Altitude training is exercising and sleeping, or simply inhaling the oxygen-reduced air that can be found at high altitudes in order to improve athletic performance, body composition, health, wellness, and for pre-acclimation prior to traveling in high-altitude areas.

ABOUT US

Polish producer of high-altitude technology

This presentation contains a collection of information on our product called AIR ZONE. We would like to present the benefits of the innovative application of hypoxia-inducing devices.

AIR ZONE has been developed by Polish scientists and engineers and offers permanent rooms, mobile spaces, and tents in which atmospheric air is modified by lowering or increasing oxygen concentration.

This allows for inducing specific conditions of hypoxia (in high-altitude conditions) or normobaric hyperoxia (conditions of increased oxygen concentration). The whole process takes place without changes in atmospheric pressure. Also, the technology allows you to control and regulate the temperature and humidity of indoor air, even in very extreme ranges. With innovative technological solutions, small spaces, large halls, and individual sports facilities can be adapted to suit the needs of athletes.

Unique features of AIR ZONE include:

- safety of use,
- ease of use,
- effectiveness.

Hypoxia

All about it

Hypoxia is a phenomenon of oxygen deficit in tissues in relation to oxygen demand, leading to deteriorated oxygenation in the body. Beneficial effects of hypoxia have been known for many years, and athletes often choose to train at the higher parts of the mountains to improve their physical performance. Spending several weeks in such conditions makes the body increase its physical capacity, which significantly improves athletic performance.

This improved effect in the form of slight hypoxia forces special adaptations in the body, which in lowland conditions leads to the increase in physical capabilities.
The first devices that induced hypoxia appeared in the late 1990s. With these solutions, it became possible to induce body responses in lowland conditions similar to those observed in high mountainous areas.

With AIR ZONE, you don’t need to leave for high-mountain camps as the same effects can be achieved in specially adapted rooms.

How it works

By reducing the blood and tissue oxygen saturation, several physiological body responses are induced to improve oxygen supply. The primary response is an increase in the secretion of the hormone erythropoietin (EPO) in the kidneys, which is responsible for the increased production of red blood cells in the bone marrow.
Consequently, blood hemoglobin levels rise, leading to the increased oxygen transport to working muscles.

In the muscles themselves, new blood vessels are formed (angiogenesis) or an increase in the activity of oxidative enzymes used to generate energy during physical exercise is observed.

With these adaptive mechanisms, the use of oxygen supplied with blood to muscles is improved. By applying hypoxia, the improvements in oxygen transport in the body and its utilization in tissues are also observed.

Laboratory tests have shown that the use of hypoxia offers the opportunities for 10% improvement of the body's physical capacity, leading to significantly higher sports performance

OUR MISSION

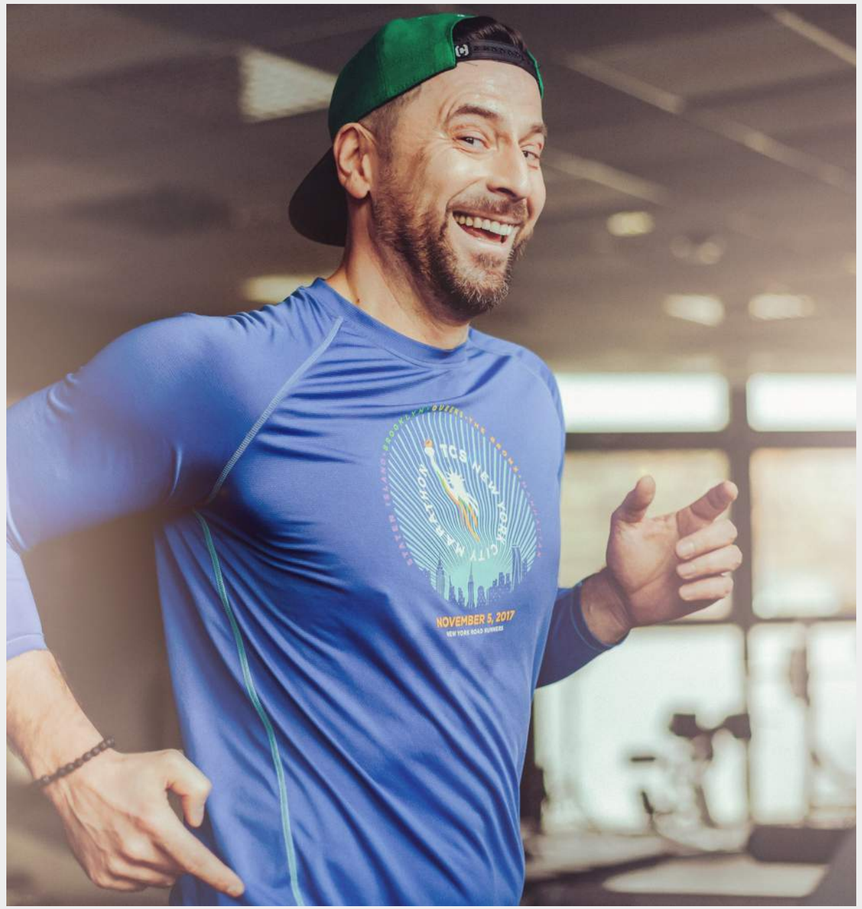
To offer hypoxic stimulation in the groups of individuals that have been using the mountainous areas to improve performance for years, including:

- extreme sports,
- mountaineers,
- military groups.

We collaborate with scientists and physicians to evaluate the effectiveness and introduce new applications of healthy hypoxia to accelerate rehabilitation, physiotherapy, and convalescence following COVID-19.

The driving force that sets the objectives for the company's development is the findings of 2019 Nobel laureates in the field of medicine and physiology. The distinguishing feature of AIR ZONE installations is a very high level of safety, control of conditions, and the option to use oxygen separated from air in additional space for oxygen therapy within one installation (hyperoxia room).

Providing conditions for healthy hypoxia or hyperoxia in different rooms does not limit the freedom of movement and exercising in any way, which cannot be guaranteed by other popular devices such as hypoxia masks or tents.



BOOST YOUR BLOOD

Training at altitude is like giving your body a tune-up. Through the adaptive process, you learn to extract more from each breath, making you more fuel-efficient.

Your heart is the pump that circulates oxygen-enriched blood around your body. It can now afford to beat less to maintain your oxygen supply. As you work at a lower rate there is less wear and tear on your internal engine, not just whilst exercising but also for the other 23 hours of the day when you are at rest.

Having a lower resting heart rate means greater heart rate reserve. You'll be able to run faster and further. With enhanced oxygen uptake and utilization system, you also recover faster, and this allows you to go again and again.

CAPABILITIES

SPORT

MORE OPORTUNITIES

Altitude training is the perfect preparation for maximizing your performance. It can improve athletes' endurance, speed, reaction time, recovery rate, and significantly accelerate rehabilitation following an injury.

Altitude training is no longer a tool only for elite athletes. The research-based practice has shown that it can be used to improve the performance of athletes of all skill levels in a wide variety of sports.

Living or training in conditions imitating a high-altitude atmosphere improves the body's endurance at sea level and, in the appropriate mountain conditions, gives athletes a real advantage over others.
By adapting the circulatory, respiratory and muscular systems, athletes get the effect of improving stamina and endurance.

Correctly applied in the training process, hypoxia leads to improvements in both aerobic and anaerobic capacity. This helps improve the body's capabilities of making various kinds of exercise, thus allowing for the improvement in performance in almost any sport.

REHABILITATION

BACK TO SPORT AT ALTITUDE

Hypoxic training is also an important part of rehabilitation. Training in hypoxia enables patients to unload the muscle groups while maintaining a high cardiovascular and respiratory load, and consequently, fitness following injuries. This unique training also increases the production of human growth hormone and other markers that help the body repair and recover.

Research in the area of bone healing is particularly interesting, and it has been shown that hypoxia can increase mineral density to make bones stronger and improve recovery.

This is particularly important in professional sports, where the athlete's recovery is a real race against the clock.

MOUNTAINEERING

PREPARING FOR OUTDOOR EXPEDITION

After exceeding 2,500 m above sea level, the risk of acute mountain sickness increases sharply. Furthermore, incorrect acclimation to high altitudes (> 5,000m n.p.m.) may result in the development of high-altitude cerebral edema (HACE), which is a life-threatening condition.

Training with AIR ZONE offers a great tool for preparation before approaching high altitudes.

Stimulation that is analogous to that at high altitudes induces several processes of acclimation. The aim of acclimation is to adapt to new environmental conditions.
If this procedure is started and carried out before going to the mountains, the decline in physical fitness and the risk of developing acute mountain sickness is largely mitigated.

OBESITY

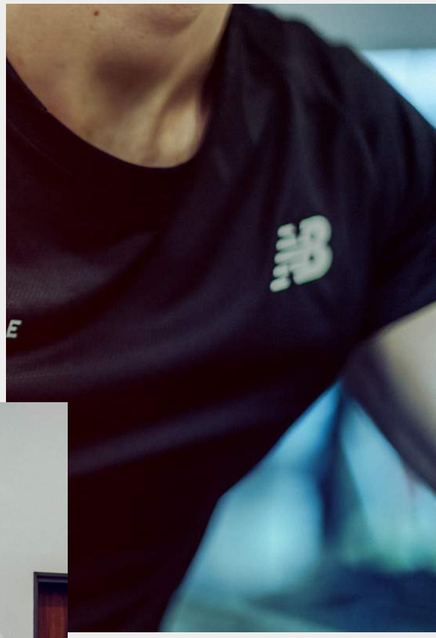
FIGHT AGAINST OBESITY

AIR ZONE is an effective tool in combatting obesity. Training in hypoxic conditions allows you to expand the network of blood vessels in fat tissue, which helps burn fat faster and get rid of cellulite.

At the same time, hypoxia increases leptin release, thus reducing appetite and stimulating the release of free fatty acids used as a source of energy for physical activity (Wiesner et al. 2009,Nikolaus et al. 2010, Lippl et al. 2010).

The advantage of training in hypoxia is that the changes in adaptivity may persist much longer after its completion and that further reduction of body fat occurs more efficiently.

Living in a hypoxic environment contributes to the increase in basic metabolism up to 30% at an altitude of 4,300 m (Butterfield et al. 1999), which is crucial to combatting obesity. It should be noticed that hypoxia comes to appetite suppression, which may contribute to easier weight loss (Kayser 1992).



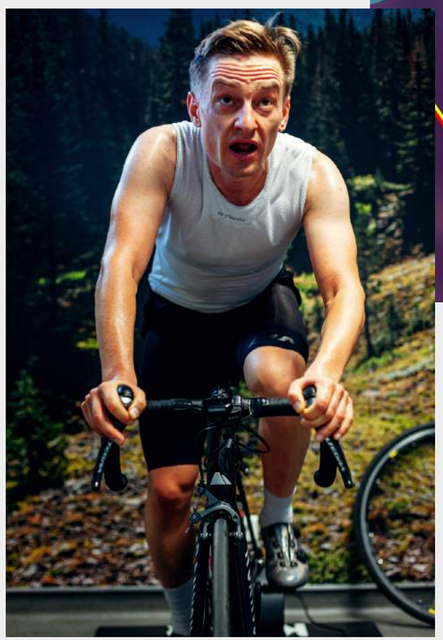
CARDIOVASCULAR DISEASES

ALTITUDE THERAPY

The AIR ZONE system has also a very beneficial effect on muscles. It has been shown that the incidence of myocardial infarction is extremely low in people living at high altitudes (Majid et al. 2011) due to the cardioprotective (protecting the heart) effect of hypoxia.

Another positive factor is stimulation of the vascular endothelium to release larger amounts of nitric oxide (NO) than usual.

The greater volume of nitric oxide causes the expansion of the coronary vessels, allowing blood to flow through them into fully permeable vessels. Nitric oxide also releases hepatocyte growth factor (HGF), which has been proved to have cardioprotective and recovery effects (Kolar et al. 2004)



APPLICATION IN TYPE II DIABETES

ALTITUDE THERAPY

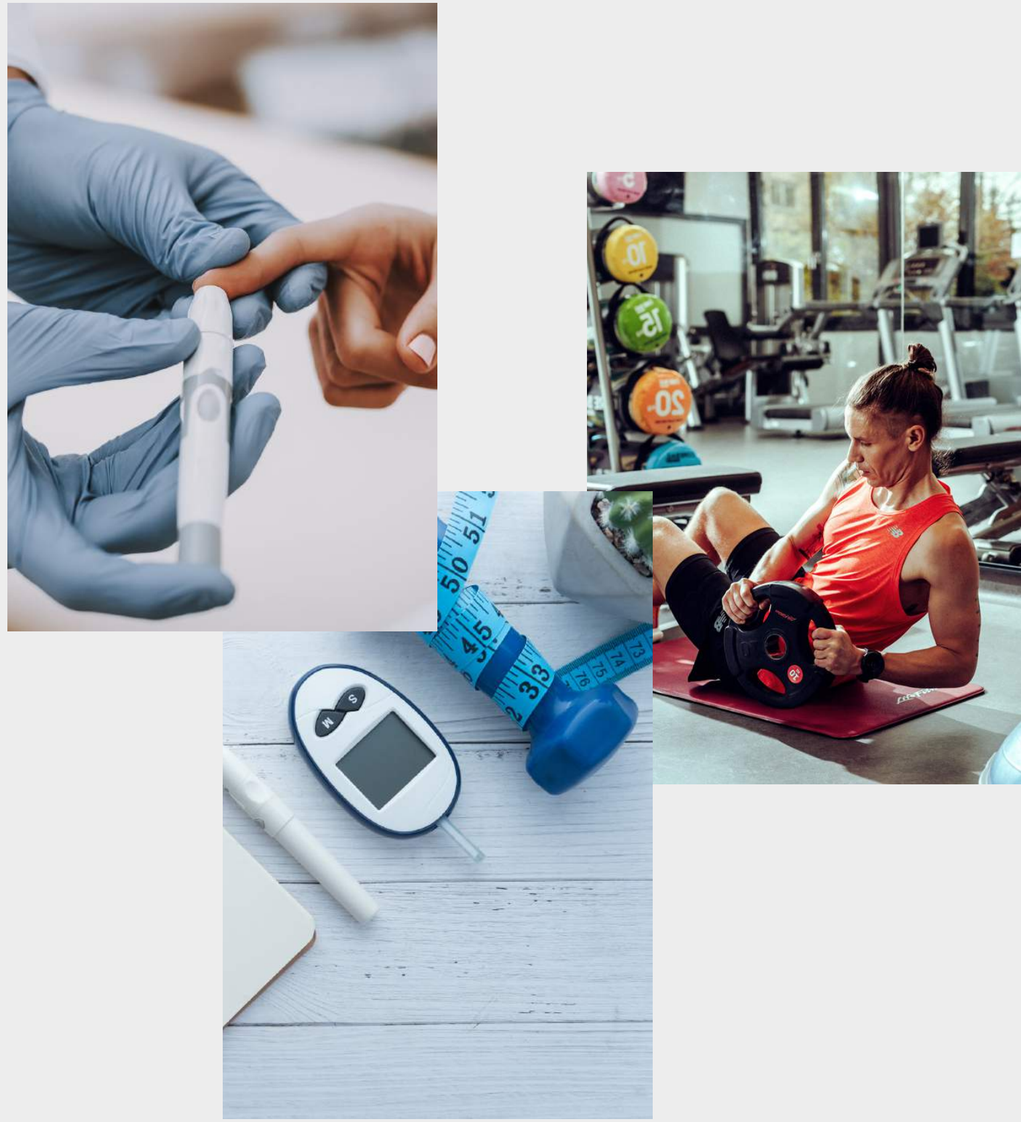
The AIR ZONE system can directly improve the health of patients with type 2 diabetes.

Studies have shown that a suitably selected set of exercises performed in hypoxic conditions, (above 2,500 m above sea level) allows, in a short time, for triggering a response caused by the occurrence of larger amounts of glucose transporters (GLUT) that facilitate glucose diffusion into cells, thus reducing the volume of blood glucose.

The appearance of a greater amount of glucose transporters is associated with the activity of a hypoxia-inducible factor (HIF). The same factor participates indirectly in the development of blood micro-vessels to effectively stop diabetic angiopathies.

With simultaneous physical exercise, it additionally contributes to the consumption of glucose and increases insulin sensitivity.

Furthermore, a reduction in cholesterol levels is also observed (Chiu et al. 2004, John et al 1995).



FOOTBALL CASES

HOW IT WORKS

The exposure of the human body to hypoxic conditions both at rest and in combination with exercise contributes to the activation of numerous adaptative mechanisms.

These changes improve the effectiveness of traditional training and therapeutic methods. The hypoxia-induced transcription factor is the main regulator of the process of adaptation to hypoxia.

Hypoxia-inducible factor (HIF)
This factor is considered to activate over a hundred genes in the human body, hence the wide range of applications of the hypoxic environment as an ergogenic and therapeutic agent.

ALTITUDE TRAINING
in sports

During minimal exercise, the body takes in less oxygen and therefore:

- has to work harder
- the body is subjected to greater stress,

Consequently, this leads to:

- an increase in blood hemoglobin,
- an increase in muscle fiber capillarization,
- improvement in the buffering capacity of muscles,
- an increase in the activity of glycolytic enzymes,
- reduced energy cost of exercise,
- improvement in anaerobic and aerobic capacity.

TOP IN SPORT

USE HIGH ALTITUDE TECHNOLOGY

TOP BASKETBALL TEAMS

TOP RUGBY TEAMS

ATHLETICS

TOP FOOTBALL TEAM

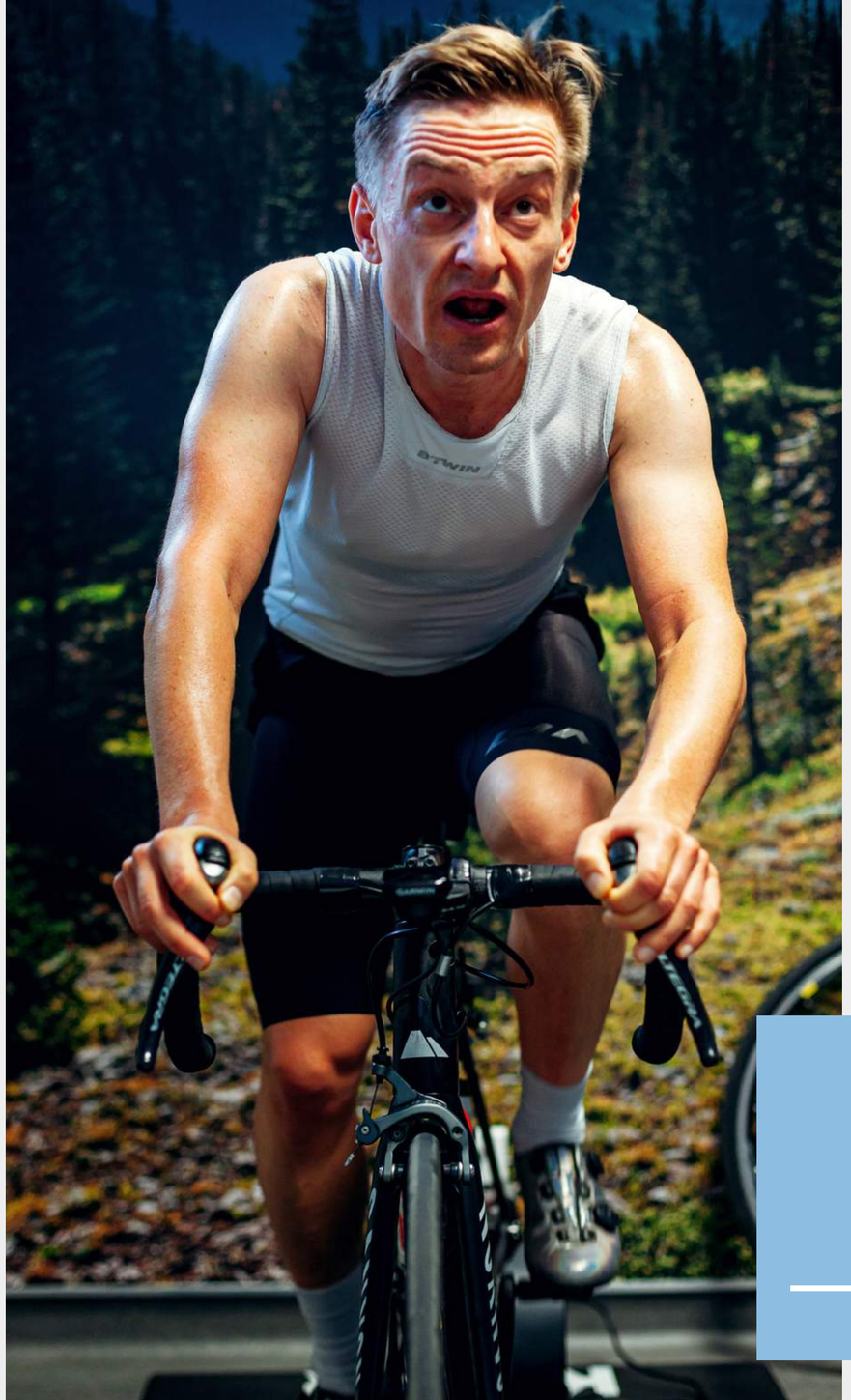
MARTIAL ARTS

HIGH ALTITUDE: TRAINING STRATEGIES

The search for the most effective training methods contributed to the development of the following high-altitude training protocols:

- live low - train high - LL / TH
- live high - train low - LH / TL
- intermittent hypoxic training (IHT)

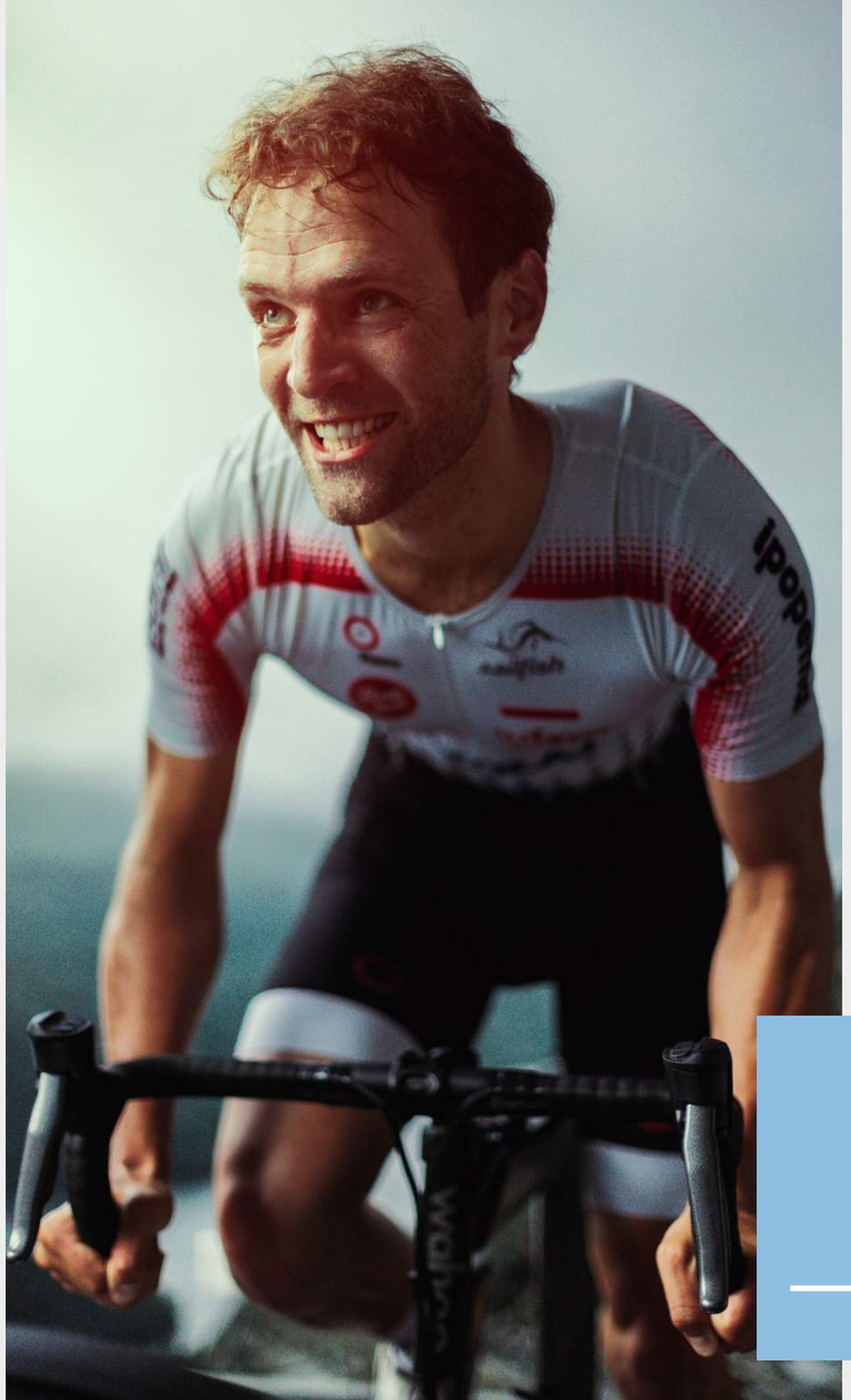
All exhibition methods are available in AIR ZONE TECHNOLOGY



LIVE LOW TRAIN HIGH

The LLTH strategy is used by the athletes who live at or near sea level and train in low-oxygen environments that simulate high altitudes. One type of training is intermittent hypoxic training (IHT). This method offers several health, fitness, and performance-related benefits such as:

- Increased muscular endurance, power output, and anaerobic performance
- Decreased recovery time
- Maximized aerobic output while minimizing physical stress
- Maintaining cardiorespiratory fitness in athletes following injuries
- Accelerated recovery of the athletes following injuries compared to sea-level training
- Pre-acclimation benefits for mountaineers



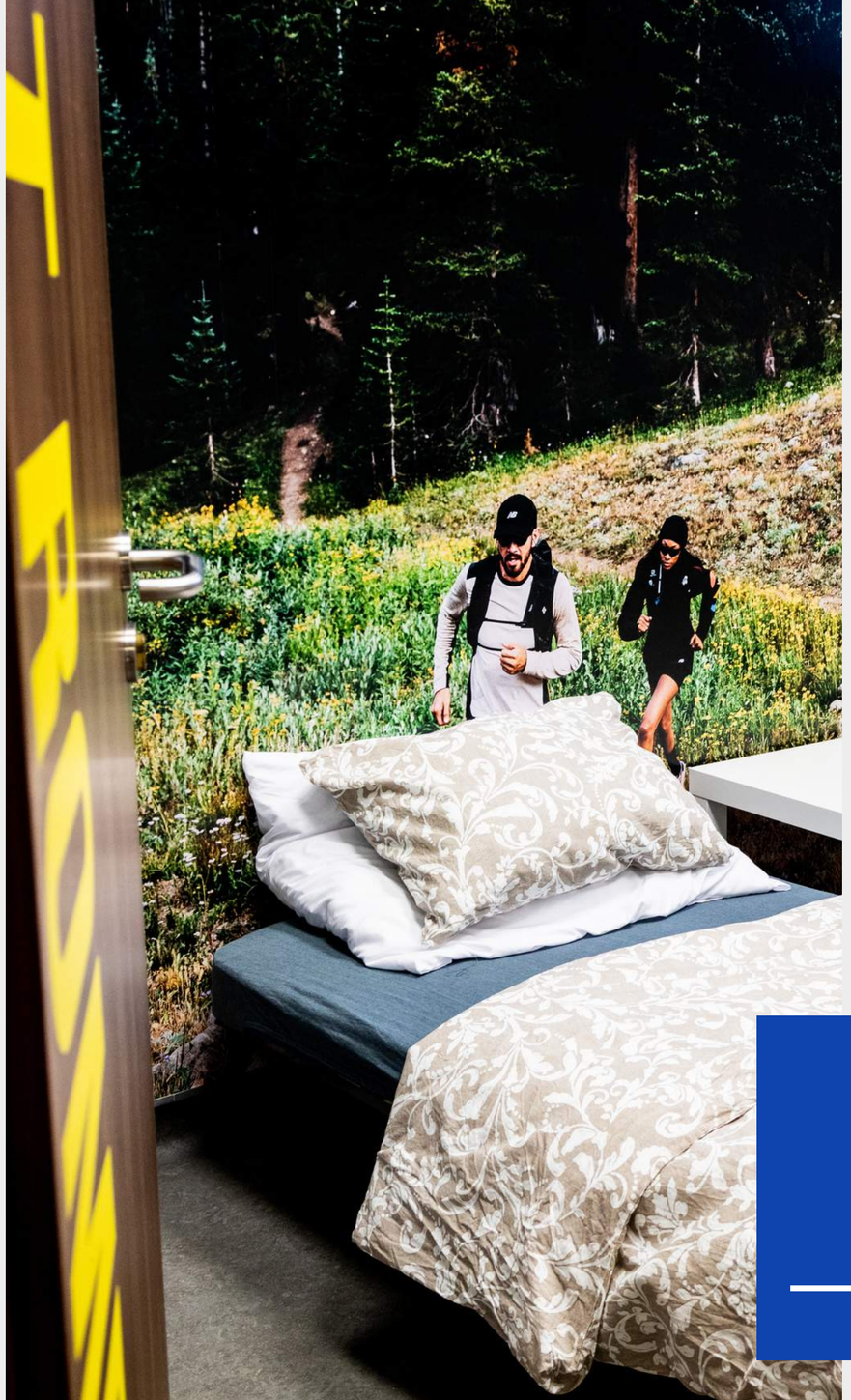
IHT

In the IHT method, athletes spend the day in normoxic conditions, while selected training sessions are performed in hypoxic conditions. In practice, such a training solution is possible with the use of normobaric hypoxic rooms equipped with the proposed technology, which allows simulating high mountain conditions over a very wide range, even up to 8,000 m above sea level.

IHT alternates between short exposures to low oxygen and normal air. This form of training works well for both beginner and elite athletes. The improvements are observed in either increasing the oxygen absorption capacity (longer exercise and faster recovery) or the optimization of muscle function. By increasing the number of mitochondria and the amount of blood vessels in the muscles, you improve the muscle's ability to produce the energy it needs to work during training.

Long-term exposure can cause positive changes in muscle buffering capacity (associated with a burning sensation in the muscles during exercise) and stimulate angiogenesis (forming more blood vessels).

Benefits can be expected in conjunction with a well-designed training program. It can also help people on a tight schedule to train more effectively, enabling them to achieve their fitness goals in less time.



LIVE HIGH TRAIN LOW

This method assumes that athletes should live at medium altitudes (2000-3000 m) in order to improve blood oxygen capacity, whereas training itself should be performed at an altitude not greater than 1200 m.
This method allowed athletes to improve their blood oxygen capacity, while maintaining high training intensity.

Almost any athlete that uses LHTL can reap the performance benefits of the expanded oxygen-carrying capacity.

These are changes that your body would otherwise not achieve through typical training at sea level.

- Improves endurance and aerobic performance
- Increases red blood cell volume and hemoglobin mass
- Increases oxygen transport in the body
- Pre-acclimation benefits for mountaineers
- Reduces the risk of AMS by up to 40%
- Can improve sleep at higher altitudes

REDUCTION IN BLOOD OXYGEN SATURATION

- By reducing blood oxygen saturation, a number of physiological responses occur in the human body, thus improving the oxygen supply to tissues and its effective utilization.

ERYTHROPOIETIN

- The basic adaptive response to long-term hypoxia is the production of the hormone erythropoietin (EPO) in the kidneys, which is responsible for the production of erythrocytes in the bone marrow. As a result, oxygen transport to working muscles improves.

CHANGES IN MUSCLES

- The muscles also undergo changes such as increased density of the blood vessel network and mitochondria, and improved activity of oxidative enzymes used to generate energy during activity. Consequently, the use of oxygen supplied with blood is improved in the muscles.

IMPROVED SPORTS RESULTS

- Laboratory tests have indicated that the use of hypoxia together with optimal training offers the opportunity of increasing the body's performance by up to 10%, which causes a significant improvement in sports performance.

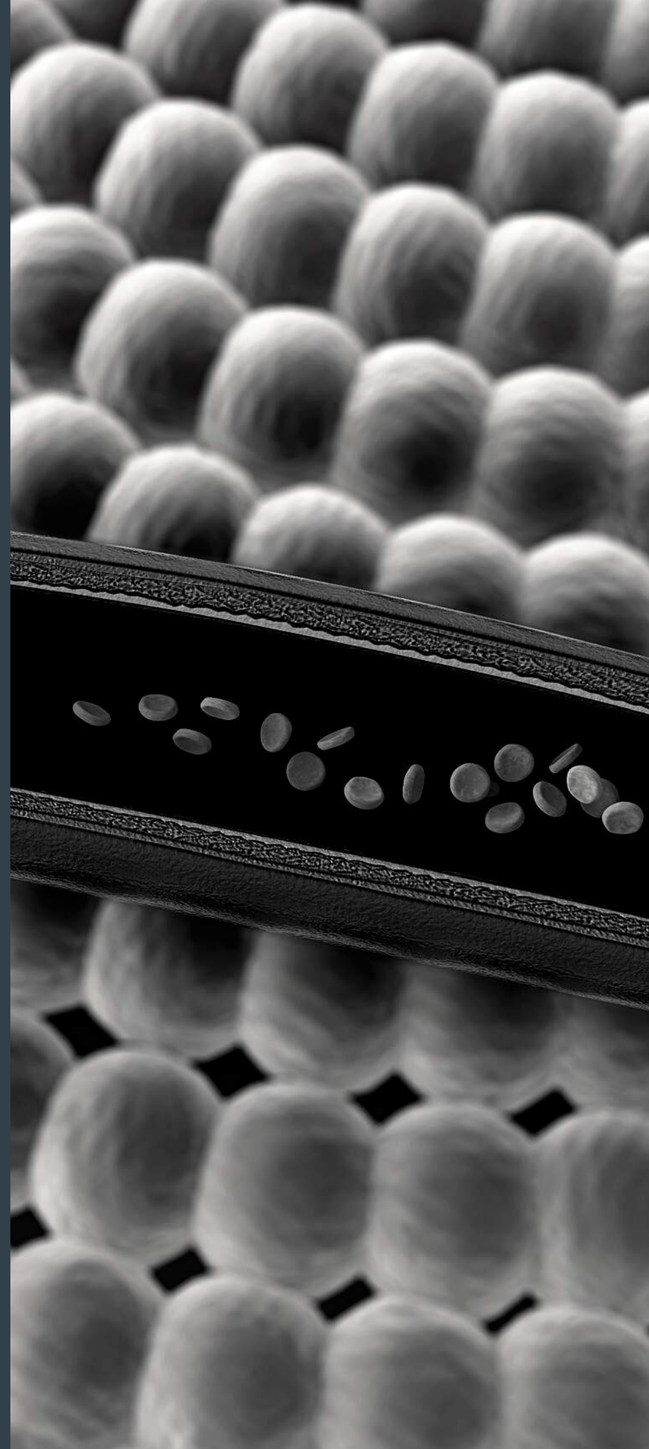
STRENGHTS

INCREASE IN HEMOGLOBIN

to 10%

Improving the body's efficiency

to 10%



Post-traumatic rehabilitation is a race against the clock, and getting back into shape under hypoxic conditions will ensure:

- maintaining the efficiency of the circulatory and respiratory systems following an injury,
- shortening the convalescence time,
- possibility of the significant stress on the circulatory and respiratory systems with a small mechanical stimulus,
- improving the work of the immune system,
- support in reducing body fat,
- improving sleeping conditions.

STRENGHTS

effect is even better

Reduction of expenses on pharmacological treatment

WE GIVE SOLUTIONS

OUR TECHNOLOGY

WE GIVE SOLUTIONS

Our comprehensive approach to cooperation allows us to provide personalized services such as:

- Analysis and consulting
- Building and detailed design or installation of modular solutions
- Training
- After-sales care
- Substantive and technical support
- Maintenance services.

AIR ZONE technology enables oxygen adaptation to precisely defined conditions to simulate any altitude.

The use of our technology offers a comfortable and safe environment
24 hours, 7 days a week, all year round.

KEY PROJECTS

IN POLAND

AIR ZONE technology provides the best solutions on the market to the largest sports centers in Poland.

Central Sports Center in Spała
Central Sports Center in Cetniewo
Central Sports Center in Zakopane
Central Sports Center in Wałcz
Sports Institute / National Research Institute

CENTRALNY OŚRODEK SPORTU

INSTYTUT SPORTU
PAŃSTWOWY INSTYTUT BADAWCZY

AIRZONE

KEY PROJECTS

IN POLAND

AIR ZONE WARSZAWA

5 individual rooms for training or accommodation, 1 group room for sports competitions and group activities

C.O.S. ZAKOPANE
C.O.S. SPAŁA
C.O.S. WAŁCZ
C.O.S. CETNIEWO

Accommodation and training rooms for athletes in Olympic preparation centers

INSTYTUT SPORTU

The hypoxic chamber and the hyperoxic chamber

AIRZONE

TRAINING ROOM

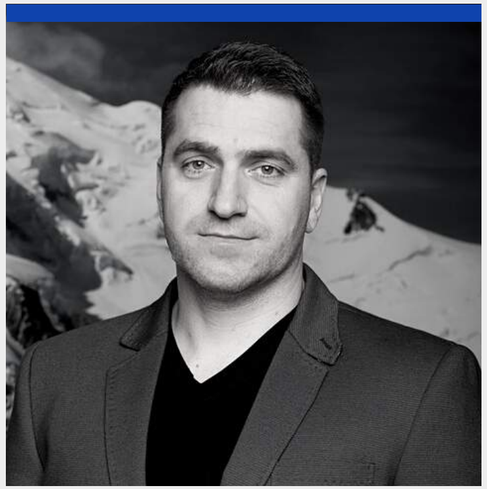
INDIVIDUAL ROOMS

REHABILITATION AREA

show room - AIR ZONE WARSZAWA

SPORTS AND SCIENCE COUNCIL

AIR SPORT



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Athlete
Multimedalist of the World Championships, European Championships
Specialization: 800m.

SCIENCE

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