**TITLE:** VI–HAT: Virtual Isolation Hypoxic Air Transmission System  
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**TECHNOLOGY:** Device – cardiovascular  

**UTSD:** 3319  

**SUMMARY:**  
This technology describes an open system to deliver hypoxic gas mixtures around the user’s face without using any kind of cumbersome containment while minimizing gas mixture mixing with surrounding room air.  

Acclimatization to hypoxic environments provides powerful protection against subsequent hypoxia exposure. Also, severe hypoxia can even stimulate regeneration of injured heart muscle; a process previously thought impossible in higher mammals.  
In order to receive an adequate benefit in physical performance, one must be exposed to a hypoxic environment for several hours each day for a minimum period of 4 weeks.  

Acquiring hypoxia acclimatization is challenging, requiring travel to mountainous and often remote locations, or very cumbersome and expensive systems to create a hypoxic environment at lower altitudes.  
Current solutions include the altitude tent and mask-based systems. Unfortunately, both of these hypoxic gas delivery systems require the user to substantially alter their living environment. In the case of the first, the user must install a tent over their bed, or elsewhere in the house. In the case of the second, the individual must wear a mask at night while asleep, which can be quite cumbersome and result in poor sleep quality.  

The VI-HAT system is designed to create a virtually isolated hypoxic microenvironment that provides an adequate stimulus for cardiovascular adaptation, yet can be used with minimal changes to the user’s living environment in the comfort of his/her home.  
The system is modifiable to adapt to different body postures and home locations to ensure that an adequate stimulus can be received for several continuous hours while either lying down or sitting upright.  
Lastly, because the system is cost-effective, it will be available to a wider population including non-affluent athletes that want to “live at high altitude” and “train at low altitude.”  

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