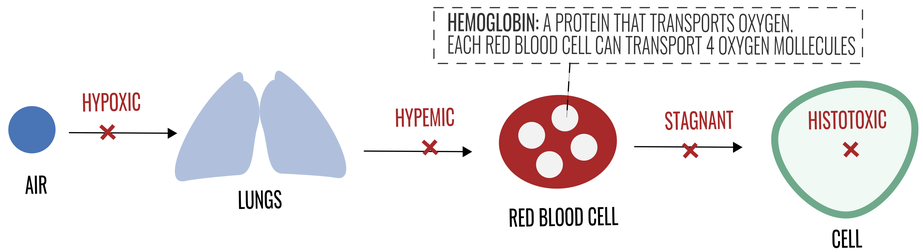
FLIGHT APPRENTICE

AEROMEDICAL FACTORS

HYPOXIA

HYPOXIA = LACK OF OXYGEN



1. Hypoxic — insufficient air pressure (e.g. high altitude)
2. Hypemic — blood cannot carry oxygen (e.g. CO poisoning)
3. Histotoxic — cells can't use oxygen (e.g. alcohol)
4. Stagnant — blood flow impeded (e..g. foot falls asleep)

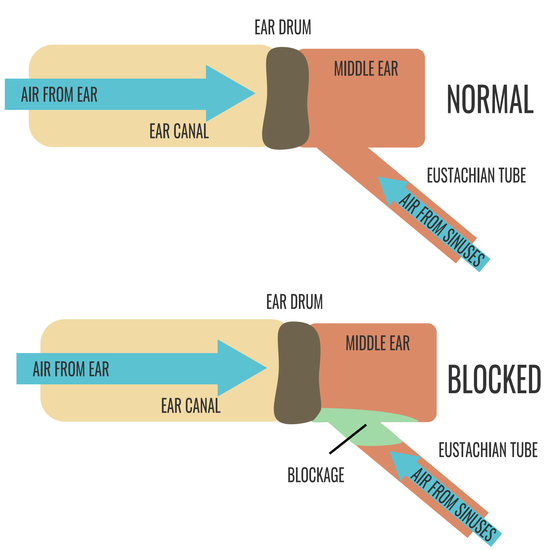
Susceptibililty to hypoxia is increased in people who smoke and drink.

CO POISONING

Carbon Monoxide (CO) is an exhuast gas which is poisonous. CO binds to hemoglobin better than oxygen. It has no smell, taste or color. But, the exhaust does have a smell, so for pilots the smell of exhuast is assumed to also mean CO.

PILOTS ARE MOST LIKELY TO EXPERIENCE A CO EVENT AS A RESULT OF A LEAK IN AN EXHAUST PIPE. IF YOU SMELL EXHUAST, TURN OFF THE CABIN HEAT AND OPEN THE WINDOWS!

SINUS BLOCK



Your middle ear is filled with air from your sinus system (nose and throat). This air passes through the eustachian tube.

When the tube is blocked this prevents air pressure from equalizing. This puts strain on your ear drum.

It doesn't usually hurt climbing as much as it hurts descending.

SOMETIMES SINUSES ARE ONLY PARTIALLY BLOCKED. PILOTS CAN PLUG THEIR NOSE AND BLOW TO OPEN THE TUBE.

AVOID FLYING WITH SINUS ISSUES.

AIR SICKNESS

Passengers are especially prone.

You can help aleviate it by:
- opening windows/vents.
- avoiding abrupt movements.
- distracting them.
- landing.

PHYSIO. BASICS

YOU CANNOT PERFORM WELL IF YOU DON'T:

EAT
DRINK WATER
EXERCISE
SLEEP ENOUGH

STRESS/FATIGUE

Stress and fatigue are commonly overlooked aeromedical issues for pilots.

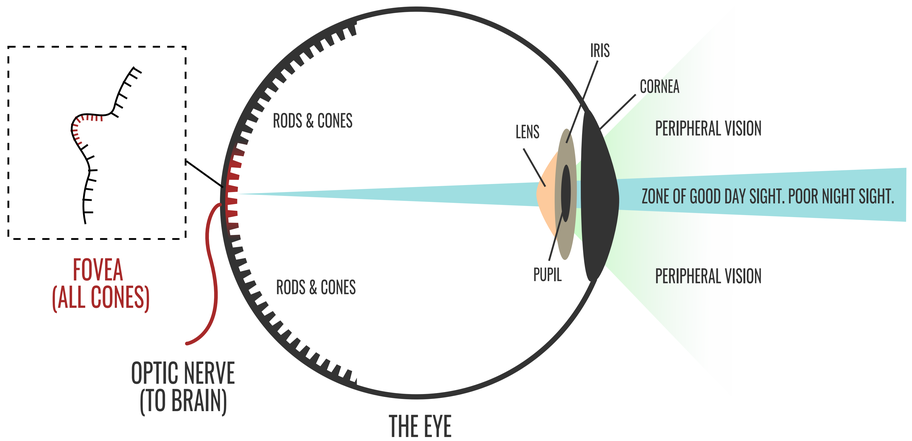
It is, of course, best to avoid flying while stressed or fatigued. Getting enough sleep, exercise and eating well can help immensely.

That said, if you are a professional pilot you will fly fatigued or stressed sometimes. When this happens, it's important that you realize you are operating at a disadvantage, and adjust accordingly.

NIGHT BLINDNESS

IN LOW-LIGHT CONDITIONS, HUMANS HAVE A SMALL BLIND SPOT IN THE CENTER OF VISION.
This is caused by a cluster of cones called the fovea. During the day, the fovea allows us to see in high detail in the center of vision. However, cones are not sensitive enough to see in low-light conditions.

PILOTS USE **RED LIGHTS** AT NIGHT TO AVOID OVER-STIMULATING RODS. THIS PRESERVES NIGHT VISION.



CONES: See color and high detail, but don't work well in low light.

RODS: Sense movement, low detail, but work well in low light. More sensitive to white light.

CENTER OF VISION: Great for seeing high detail, but has blind spot in low light.

PERIPHERAL VISION: Great for sensing movement and in low light.

EMPTY FIELD MYOPIA

Myopia is a normal, every-day occurence in which the eye maintains a resting state, resulting in a natural focus a few feet away. Pilots experience myopia when looking at generally featureless areas, including a clear blue sky, very dark nights, and featureless desert or snow-covered terrain. The eyes see nothing to focus on, so they focus on nothing.

Myopia results in difficulty seeing traffic and, more importantly, is related to controlled flight into terrain (CFIT) incidents.

MYOPIA MITIGATION

- Scan the visual field frequently in increments.

- Focus frequrnly on any distant objects (e.g. moutains) which can encourage the eyes to change focus. Occasioanlly focusing on the wings may also work.

- Use your peripheral vision, which is more sensitive to slight movements.

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