3. Diving Adjustments

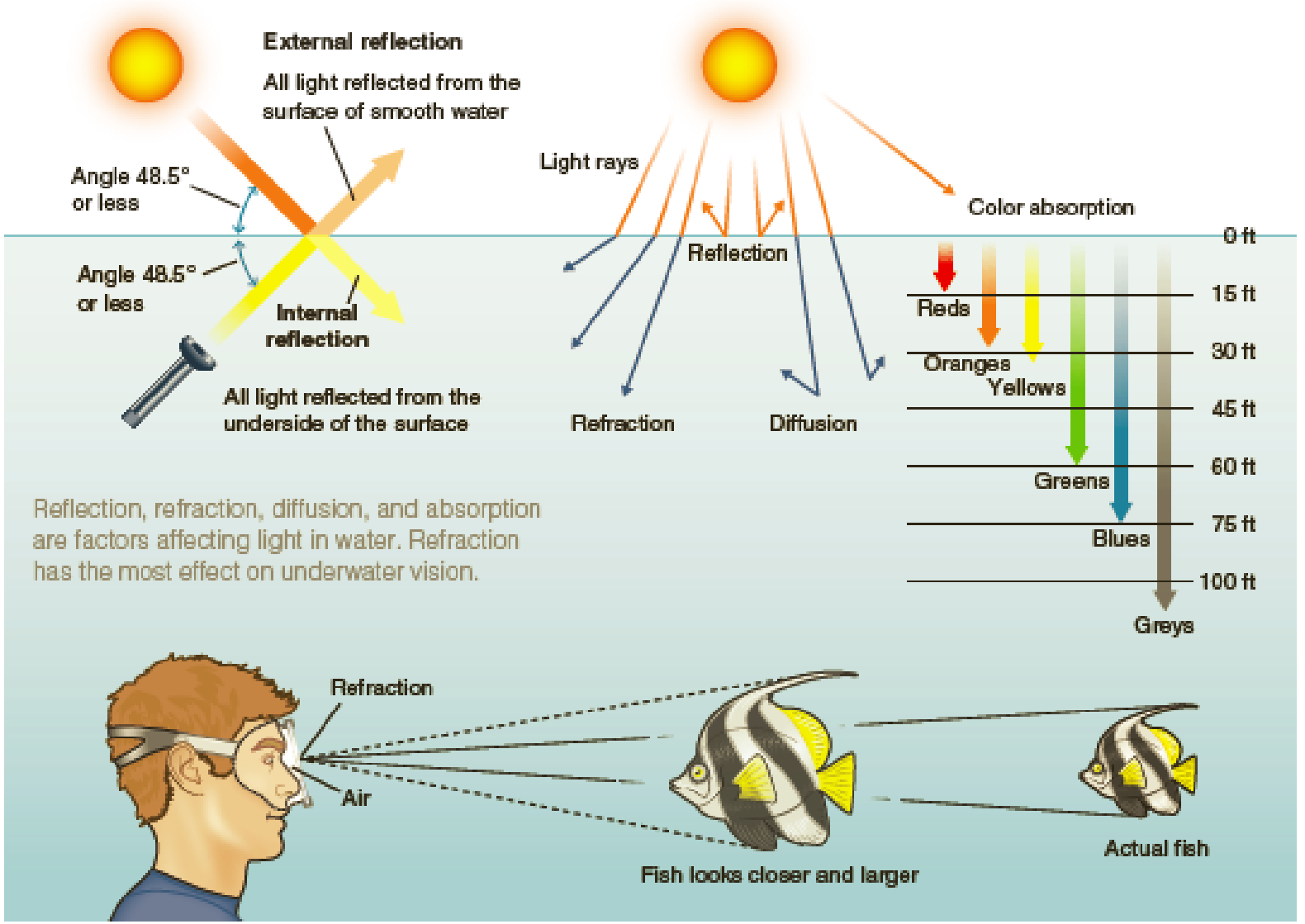
	Percentage	Partial pressure at 1 ATA	Partial pressure of gas at 1 ATA (metric)
Nitrogen	78%	11.466 psia	0.803 kg/cm²
Oxygen	21%	3.087 psia	0.2163 kg/cm²
Argon	0.93%	0.137 psia	0.0095 kg/cm²
Trace gases	0.04%	0.006 psia	0.0004 kg/cm²
Carbon dioxide	0.03%	0.004 psia	0.0003 kg/cm²
Totals	100%	14.7 psia	1.03 kg/cm²

Depth	Pressure	O_2*a	CO*b	CO_2*c
0 ft (0 m)	1 ATA	20%	20 ppm	2%
33 ft (10 m)	2 ATA	40%	40 ppm	4%
66 ft (20 m)	3 ATA	60%	60 ppm	6%
99 ft (30 m)	4 ATA	80%	80 ppm	8%
132 ft (40 m)	5 ATA	100%	100 ppm	10%

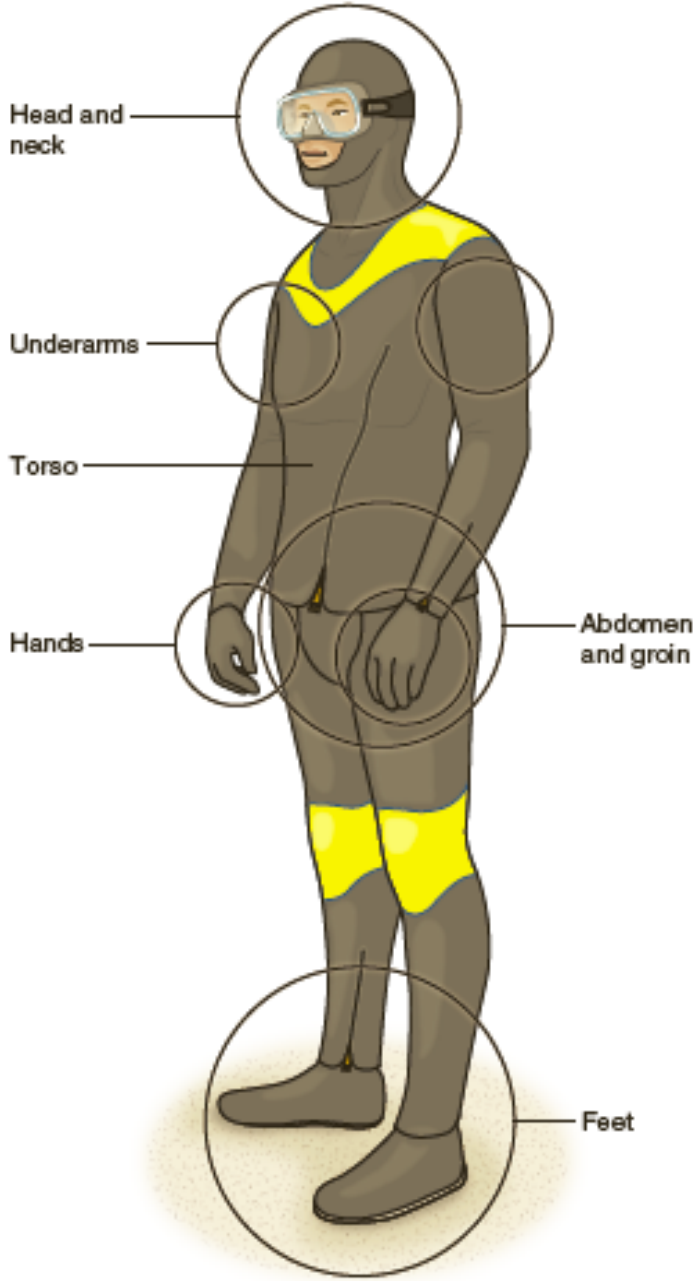
Reference: Graver, D. K. (2016). Scuba Diving 5th Edition. Human Kinetics.

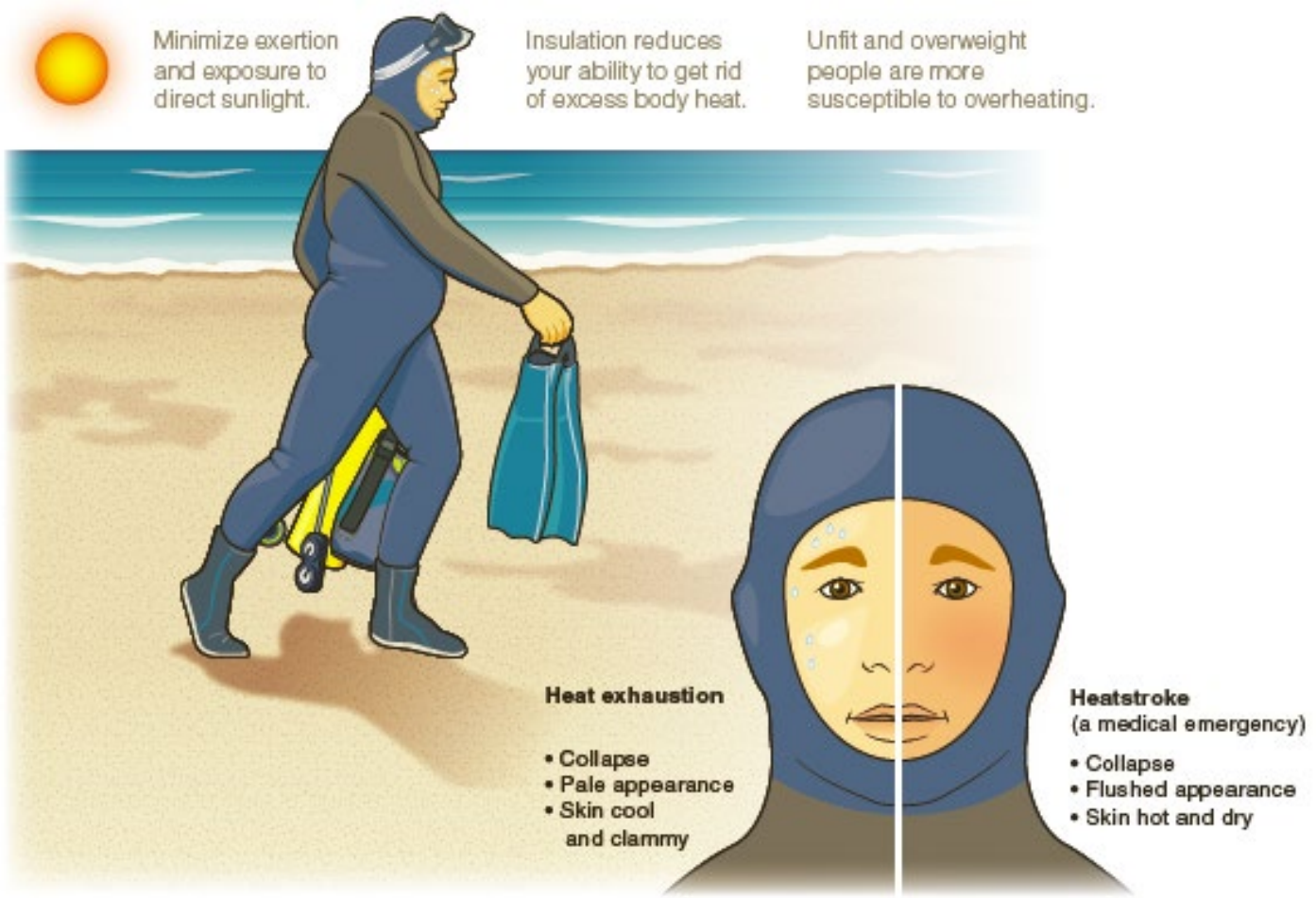
Losing or retaining excessive heat is dangerous!

Reference: Graver, D. K. (2016). Scuba Diving 5th Edition. Human Kinetics.



Reference: Graver, D. K. (2016). Scuba Diving 5th Edition. Human Kinetics.

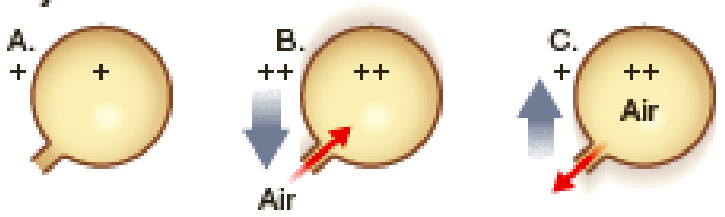




Reference: Graver, D. K. (2016). Scuba Diving 5th Edition. Human Kinetics.

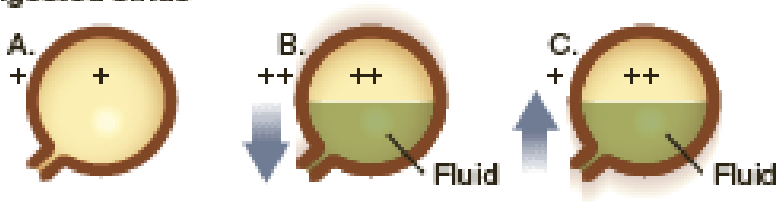
Factor	Effect
Size and weight of diver	Obese divers are more buoyant.
Type and amount of equipment	Larger equipment is more buoyant (because of increased volume).
Amount of weight worn	Weights decrease buoyancy.
Amount of air in BC	Increasing volume increases buoyancy.
Amount of air in tank	Buoyancy increases as air decreases.
Amount of air in lungs	Exertion or excitement increases volume and buoyancy.
Suit compression	Pressure decreases volume and buoyancy.
Items carried	Added weight decreases buoyancy.
Type of water (salt or fresh)	Denser water increases buoyancy.

Healthy sinus



Air can move freely in and out of a healthy sinus (A), so equalization is automatic during descent (B) and ascent (C).

Congested sinus

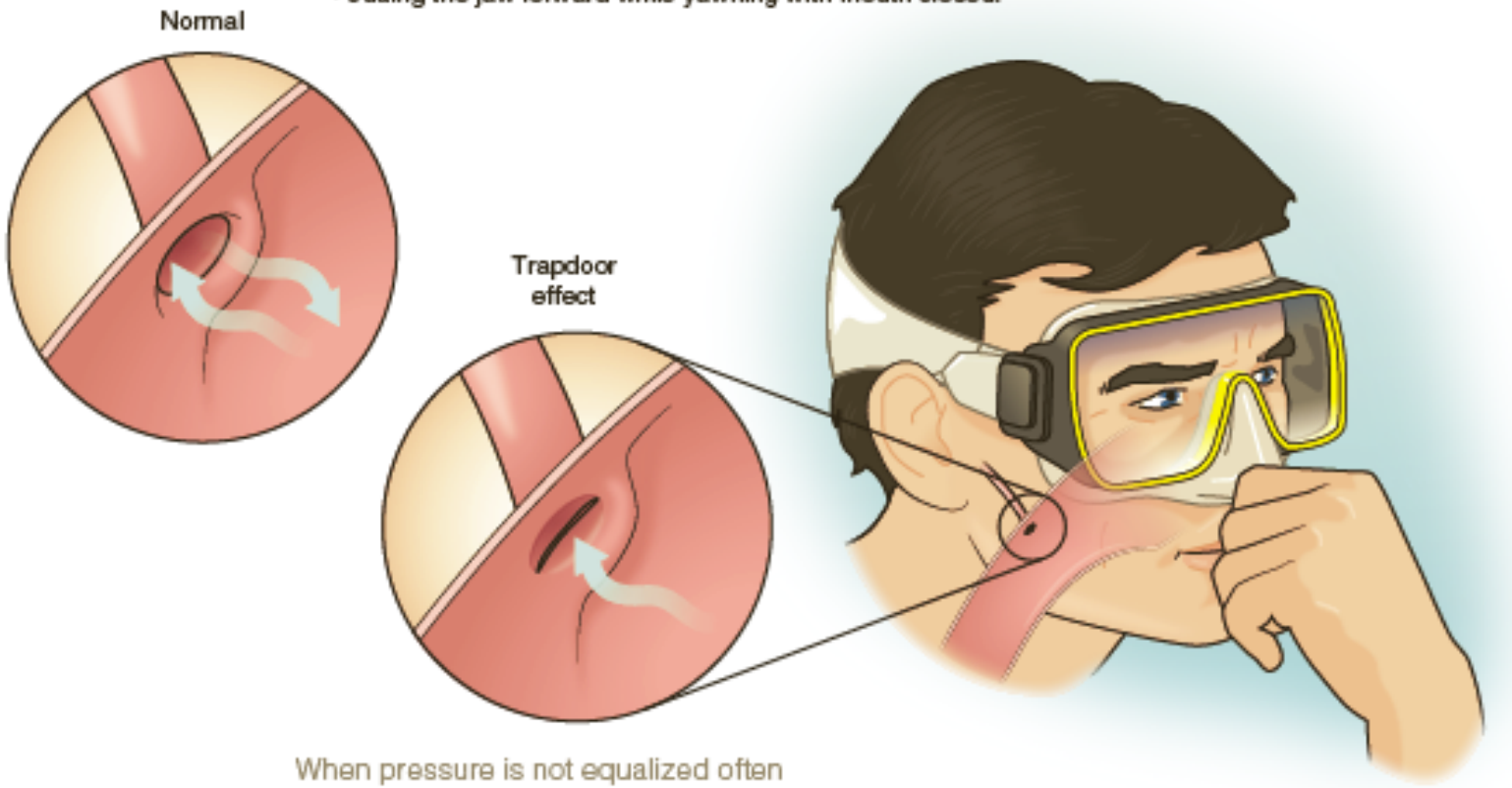


Air cannot get into or out of a congested sinus (A). The body forces fluids into the sinus at depth to equalize the pressure (B). The air in the sinus tries to expand to its original volume during ascent (C).

Reference: Graver, D. K. (2016). Scuba Diving 5th Edition. Human Kinetics.

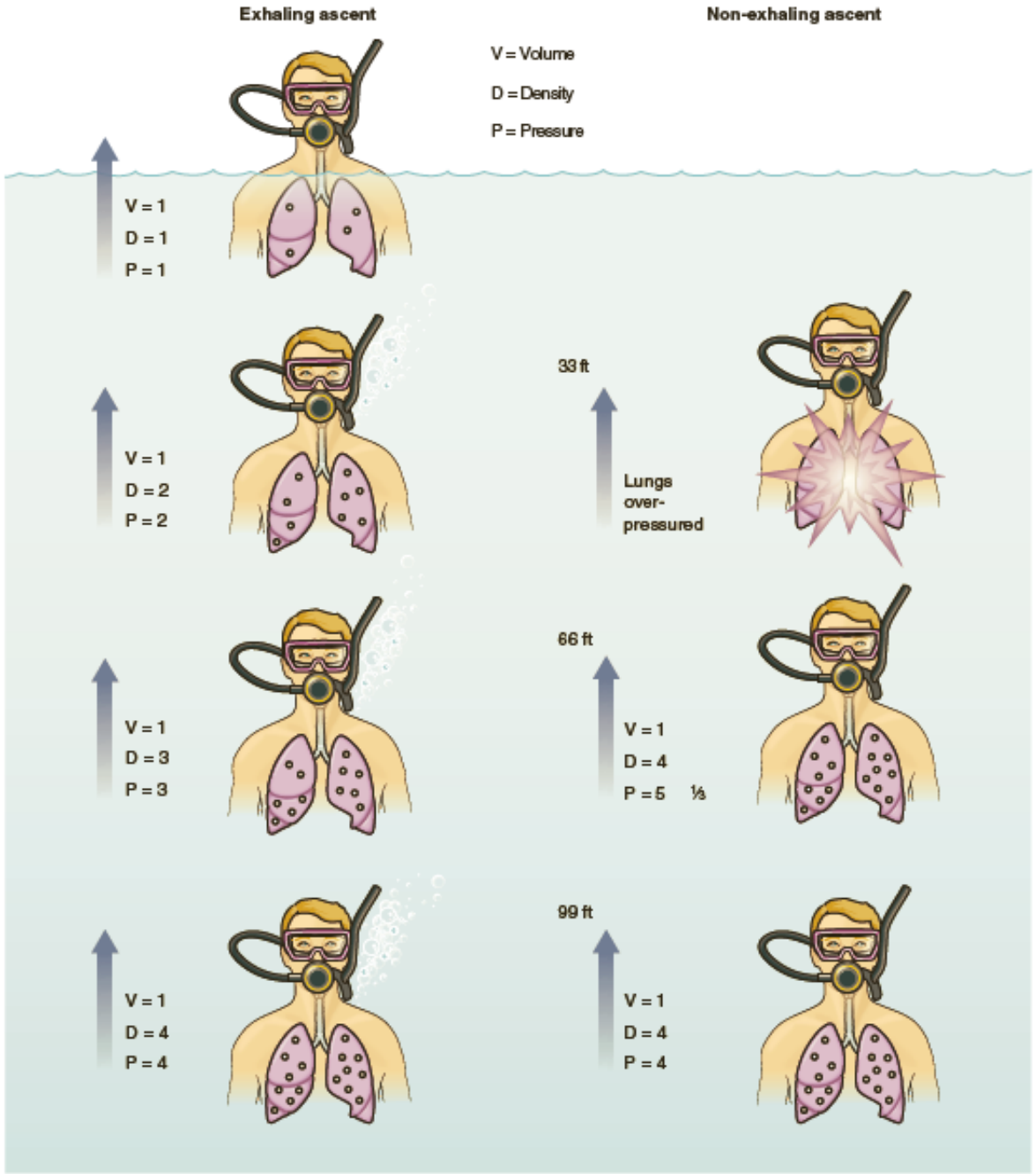
Methods to equalize pressure:

- Blowing gently with mouth closed and nostrils blocked.
- Swallowing with mouth closed and nostrils blocked.
- Jutting the jaw forward while yawning with mouth closed.

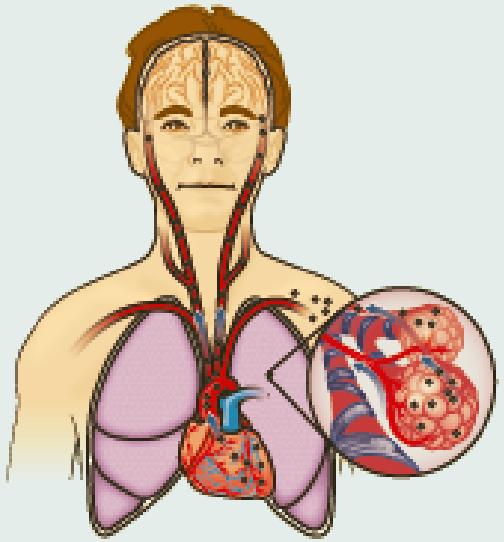


When pressure is not equalized often during descent, the pressure difference holds the end of the eustachian tube closed and prevents any further equalization until the diver ascends enough to relieve the pressure.

Reference: Graver, D. K. (2016). Scuba Diving 5th Edition. Human Kinetics.



Reference: Graver, D. K. (2016). Scuba Diving 5th Edition. Human Kinetics.



Air embolism

of an airway, such as that
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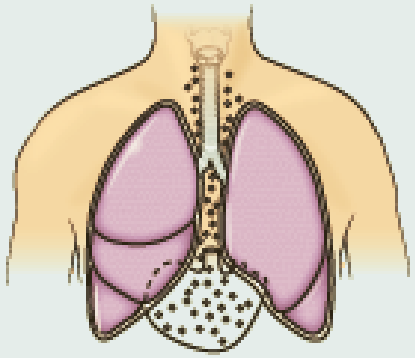
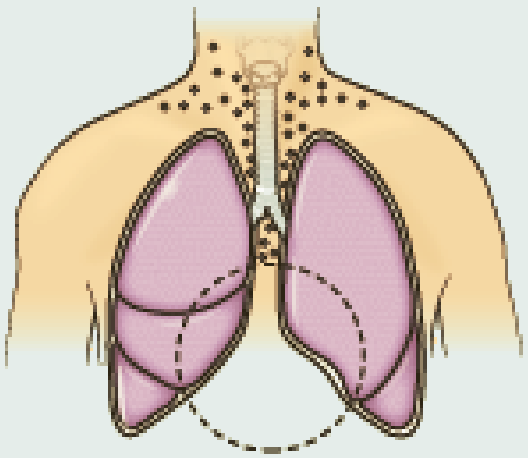
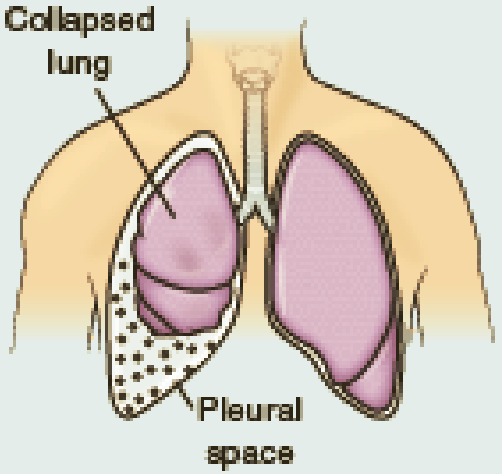


Mediastinal emphysema

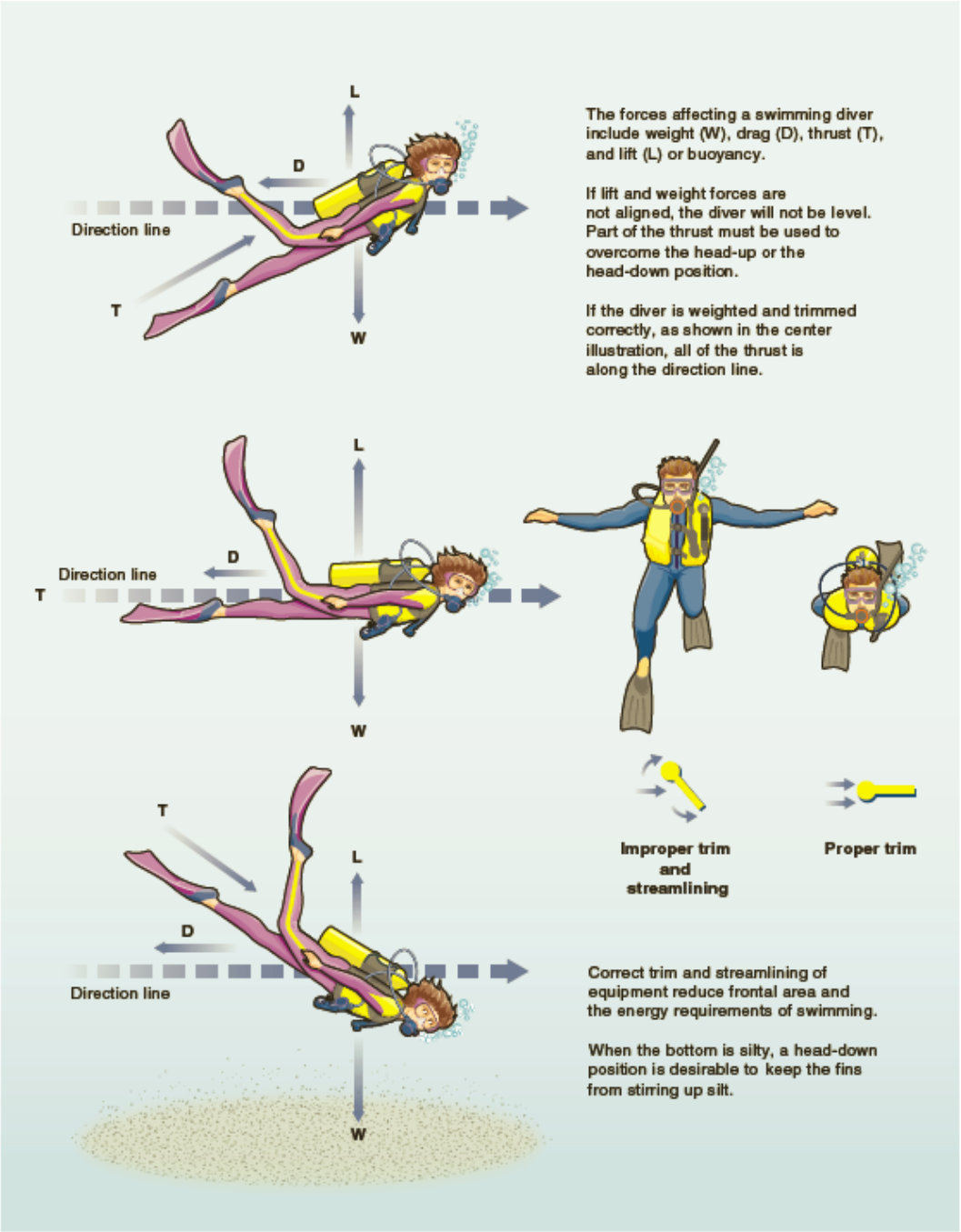


Subcutaneous emphysema



Pneumothorax

Reference: Graver, D. K. (2016). Scuba Diving 5th Edition. Human Kinetics.



Reference: Graver, D. K. (2016). Scuba Diving 5th Edition. Human Kinetics.

Figure 4.
cold-wate
water (righ

Reference: Graver, D. K. (2016). Scuba Diving 5th Edition. Human Kinetics.