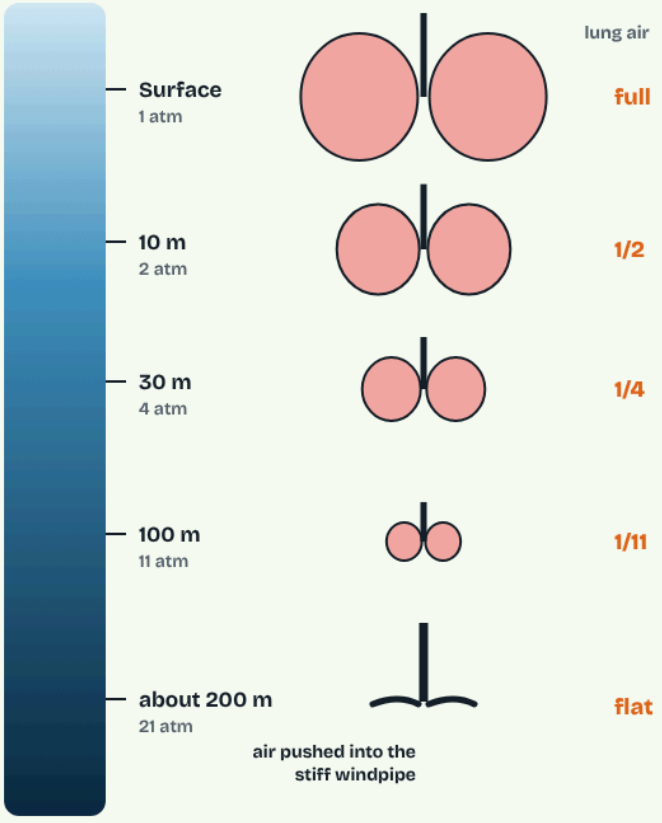
That is why

Why do whale lungs collapse on deep dives?

Water pressure squeezes the air in the lungs. Whales let them fold flat, and carry their oxygen in blood and muscle instead.

A Deeper dive, smaller lungs



B Why folding is safer

1 A bendy chest

Loosely joined ribs let the chest fold inwards under pressure instead of cracking.

2 Less nitrogen soaks in

Gas swaps into the blood in the tiny air sacs. Once they are flat, little nitrogen can dissolve.

3 Fewer bubbles later

Less nitrogen in the body means less risk of the bubbles that cause decompression sickness.

This protection is not perfect, scientists think.

C Oxygen in blood and muscle

80 to 90%

of lung air swapped in one breath (humans: about 10 to 15%)

10 to 20%

of body volume is blood (humans: about 7%)

up to 35%

of oxygen held by myoglobin in dark muscle

half

or less: heart rate during a dive, saving oxygen for brain and heart

Record dive

Cuvier's beaked whale: 2,992 m deep and 137 minutes long.

Whales do not fight the pressure. They fold and carry oxygen elsewhere.

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