

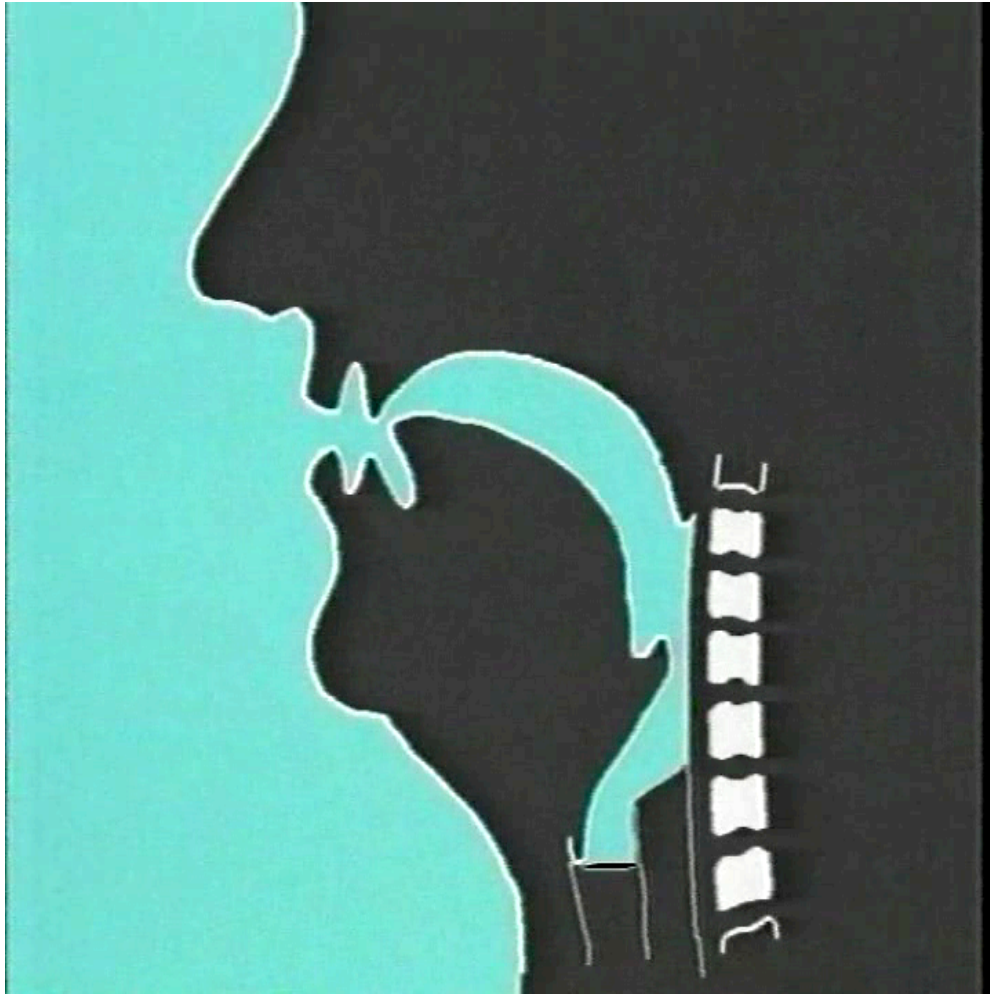
# **Neurological symptoms after glossopharyngeal insufflation (lungpacking) in breath-hold divers suggesting cerebral arterial gas embolism**

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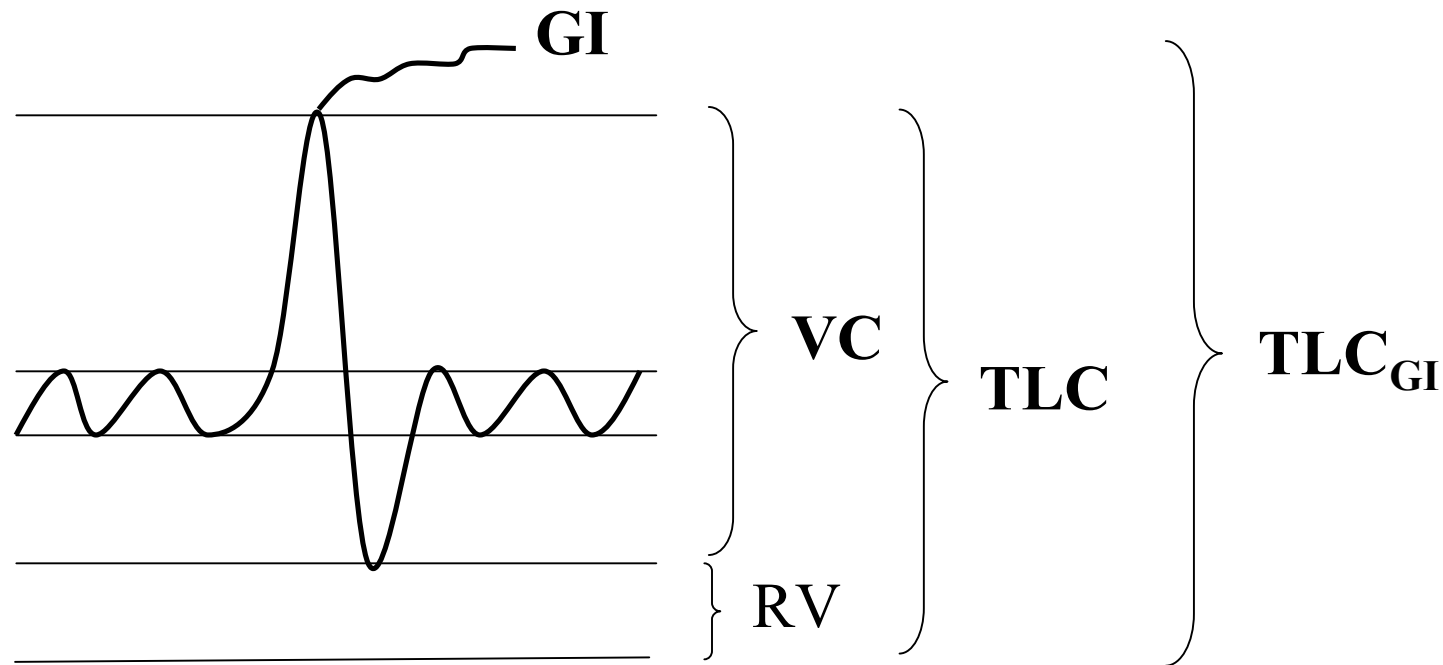
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What is Glossopharyngeal  
Insufflation,  
Also called "lungpacking"  
Glossopharyngeal breathing

From: RTP - The Swedish Association of Survivors of Traffic Accidents and Polio

# Glossopharyngeal Insufflation (GI)



- **TLC : Total Lung Capacity**
- **VC : Vital Capacity**
- **RV : Residual Volume**

# Background

Divers using GI may “pack” 3-4 liters of extra air in the lungs (Lindholm et al 2005, Loring et al 2007).

Intrapulmonary pressure may rise to 11 kPa (109 cmH<sub>2</sub>O) Loring et al JAP 2007

Overextension and overpressurization of the lung may cause barotrauma

# CASE 1

Diver one performed GI to measure his lung volume. After that manoeuvre he suddenly had problem to speak clearly and to find words for 3 minutes. He also experienced weakness in the right arm and double vision for about 5 minutes. When he arrived at the hospital he was OK.

At hospital: Examination with computer tomography of the head did not show anything.

Unfortunately Chest CT was not performed  
Transient ischemic attack?, CAGE?

## CASE 2

### Diver two

reports using GI as usual in preparation for a 100 m dynamic swim. After swimming about 35m he gradually loses the ability to move, and is assisted by his safety diver. He can hear and see (blurry) but not move or talk for 5 minutes. Within 8 minutes he was able to speak again and the paralysis went away over the following hour. He reported feeling weak and nauseous for the rest of that day. He spent 2 nights at the hospital but no relevant tests were done.

# CASE 3

## Diver three

reports packing for a static apnea. After 5 min (a short duration for this diver) he aborted the dive due to an uncomfortable feeling. Approx 1 min after end of the dive he experienced a central scotoma of both eyes: He describes that about 1/3 of the visual field was extremely blurred but not completely dark. Symptoms disappeared gradually over 5 hours. He also had a long lasting nausea.

# Conclusions

These neurological signs and symptoms are different from transient hypoxia reported in extended breath-holding or lungpacking.

The divers are young and healthy, elite breath-hold diving athletes

DCI was not possible (no diving)

The symptomatology suggests cerebral arterial gas embolism