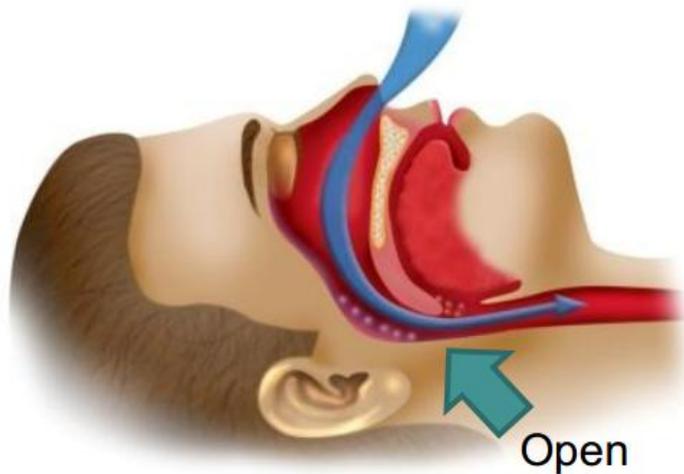


Digital Tongue Exercise Game for Sleep Apnea

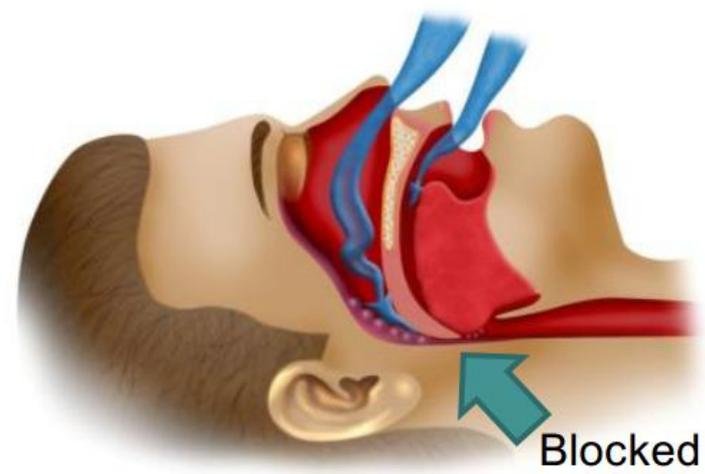
- Peter M. Bingham MD, Pediatric Neurology, *UVM/FAHC*
- Jeff Finkelstein, Principal, *MicroProcessor Designs*
- Matthew Garraffa, *VT Technical College*
- Laurel Paquette, *Champlain Valley Oral & Maxillofacial Surgery (CVOMS)*
- Paul Daniels, DDS, *CVOMS*

Obstructive Sleep Apnea

- Most common 'medical' sleep disorder
- >100 million worldwide, 12M in the US
- Over-weight, aging, males 2:1
- Accidents, sleepiness, hypertension



Airway muscles resist collapse upon inspiration; air flows freely.



Airway muscles don't resist collapse upon inspiration; airway obstructs.

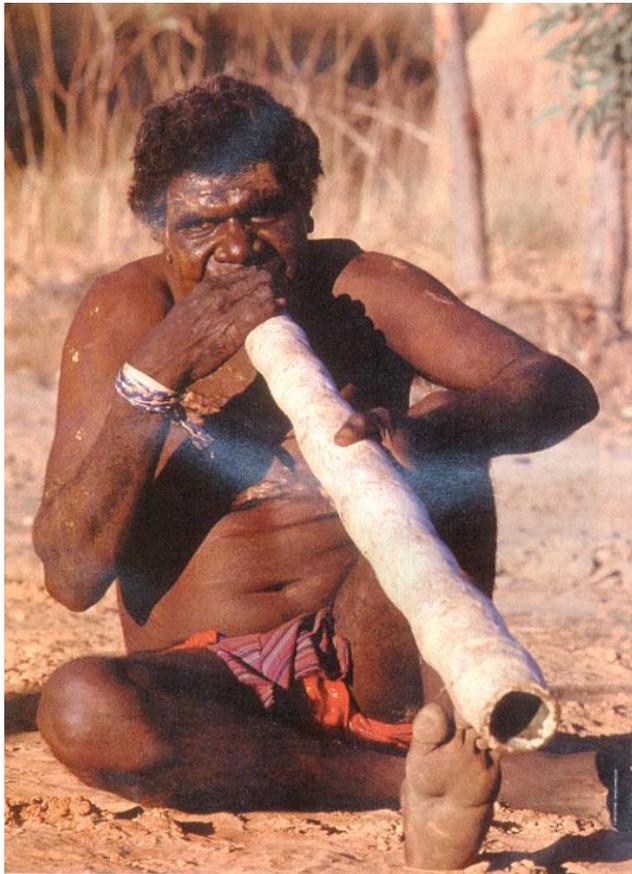
CPAP



<http://alignmap.com/>

Sleep Apnea-alternative therapy

SLEEP APNEA PACKAGE DEAL



Package deal includes therapy-grade didgeridoo, 1 hour instructional DVD, mouthpiece cover, and a 2oz bottle of DidgeriClean antiseptic spray.

Save money and get everything you need!



Expedited shipping available. Select at checkout.

<http://didgeridoosforsale.com/>

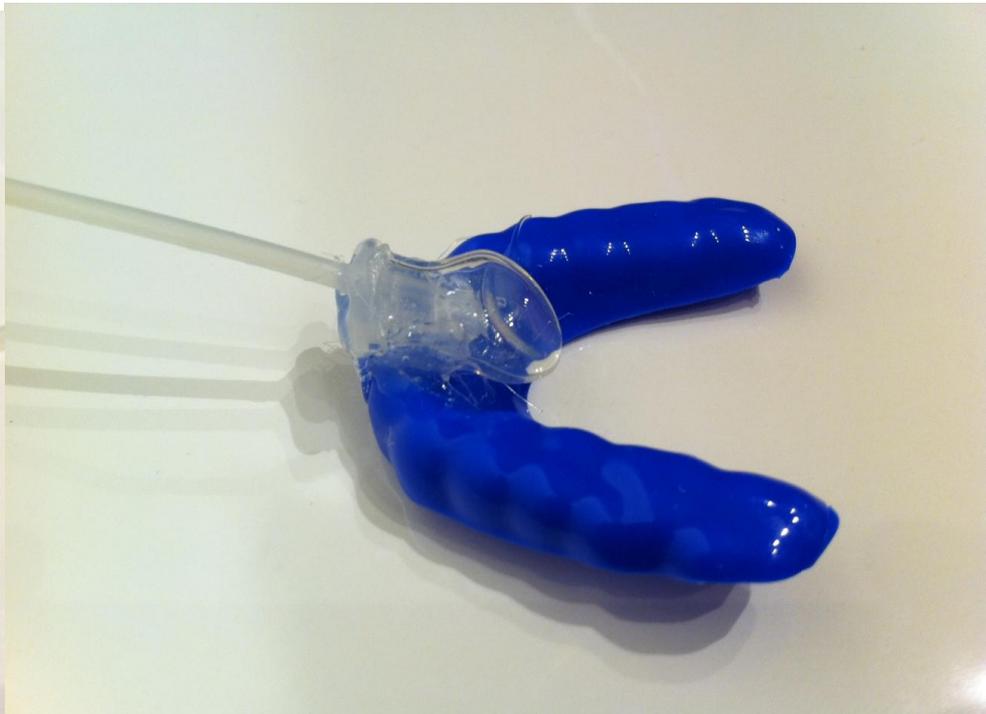
<http://cpasupplyusa.com/>

Goal

- develop and test a video-game style tongue exerciser
- to alleviate symptoms of obstructive sleep apnea syndrome
- alleviate upper airway obstruction by improving muscle tone of the tongue

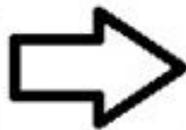
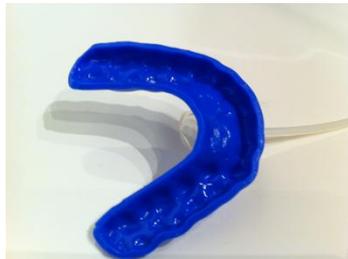
- mouthpiece--an athletic style bite block--for the tongue exerciser at a dental office for comfort and to reduce errors in the data collected
- reservoir within mouthpiece transmits palatal tongue pressure via
- polyurethane tubing to a pressure transducer (range 20 to 250 kPa)



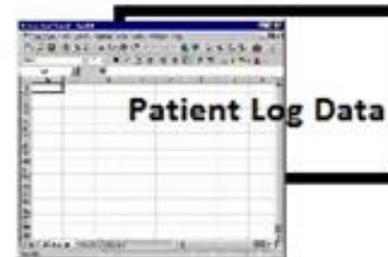


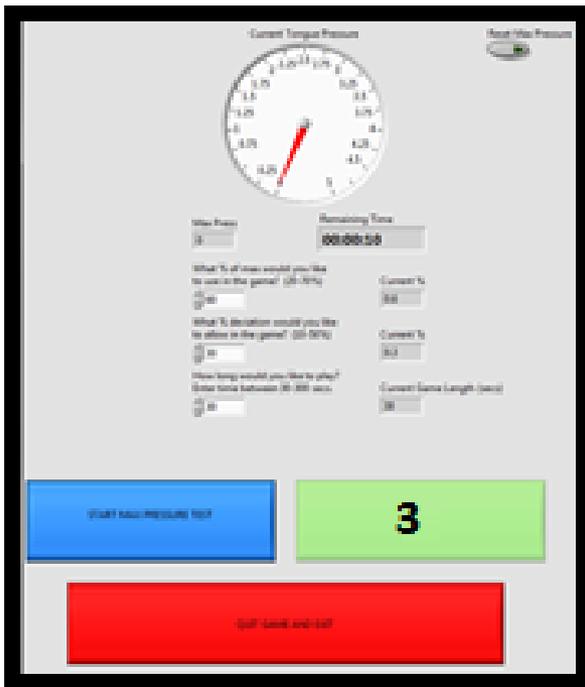
- *Patient applies pressure to the bladder in the mouth-piece*
- *pressure sensor (PS) registers pressure*
- *PS voltage read by DAQ sent to computer*
- *LabVIEW plots & logs information in a tracking game environment*



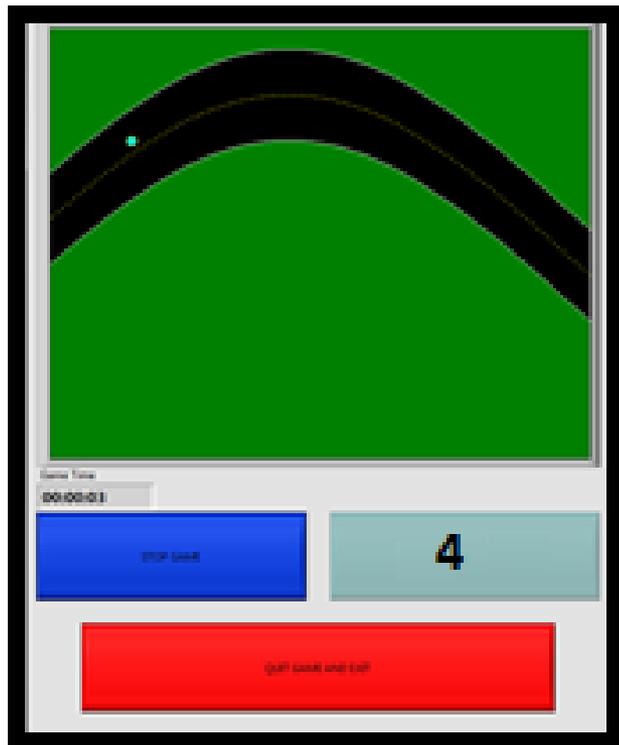
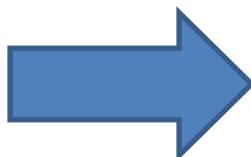


DAQ
NI USB 6008





Define Parameters of the Game



Display Game

Deliverables

- created a tongue-pressure gaming interface that features a novel hydraulic system incorporated within an athletic-style bite block
- enable digital biofeedback games for training protrusive and palatal tongue pressures
- design specifications & performance data for follow-on SBIR proposal, “Tongue Pressure Games for Obstructive Sleep Apnea”

Thank you!

- Peter.Bingham@uvm.edu

