

February 22, 2011

ENGR110/210

Perspectives in Assistive Technology



David L. Jaffe, MS



Professor Drew Nelson



Harpreet K. Sangha

Questions, Comments, Thoughts?



Administrative Items

- Four excellent lectures left
submit missed lecture summaries
- Final team presentations in two weeks
- Summer Opportunity:
ME Summer Undergraduate Research Institute
(SURI)

Electric jolts help spinal patients regain use of hands

A new treatment that delivers tiny bursts of electricity to paralyzed muscles in people with spinal cord injuries appears to actually "revive" the muscles and restore hand movement.

[Video](#)



FES Neurotherapeutic Effects

Muscle is very responsive to stimulation and there is evidence that FES improves muscle fiber size and physiology, making for stronger muscle contraction for a given level of voluntary or electronic activation. There is also early evidence that in incomplete SCI FES may lead to recovery of voluntary movement, thought to be mediated through new connections in the spinal cord. It is thought that activation of muscles may serve to direct and attract sprouting of neurons in the injured spinal cord specifically to motor neurons of activated muscles. Retrograde nerve growth factors (motorneuron growth factors that are stimulated by muscle activation) are common and may help explain this neurotherapeutic effect. The timing during recovery and intensity of treatment may influence neurotherapeutic effects.

FES Neuroprosthetic Effects

FES-assisted movement is effective in the upper limb due to the non load bearing nature and relatively small size of muscles. FES-assisted movement of lower limb, weight bearing muscles is more challenging and often limited by fatigue associated with overstimulation needed to extend limbs against gravity and prevent collapse. Therefore, hybrid combinations of orthotic and FES devices may best serve patients with SCI. In CP we are hoping that strategically timed FES patterns will increase hip and knee extension and improve gait.

Grammy Reporter Slurred Speech

TV reporter Serene Branson's gibberish on Grammy Night amused Internet viewers for a little bit - until they learned that she may have suffered a stroke. It turns out that, after testing, she suffered from a complex migraine whose symptoms often mimic a stroke. Now, Branson tells the Associated Press for the first time about the ordeal. It began with a "really bad headache." "At around 10 o'clock that night I was sitting in the live truck with my field producer and the photographer and I was starting to look at some of my notes," she said. "I started to think, the words on the page are blurry and I could notice that my thoughts were not forming the way they normally do." She went ahead with the broadcast anyway: "As soon as I opened my mouth I knew something was wrong. I was having trouble remembering the word for Grammy. I knew what I wanted to say but I didn't have the words to say it."

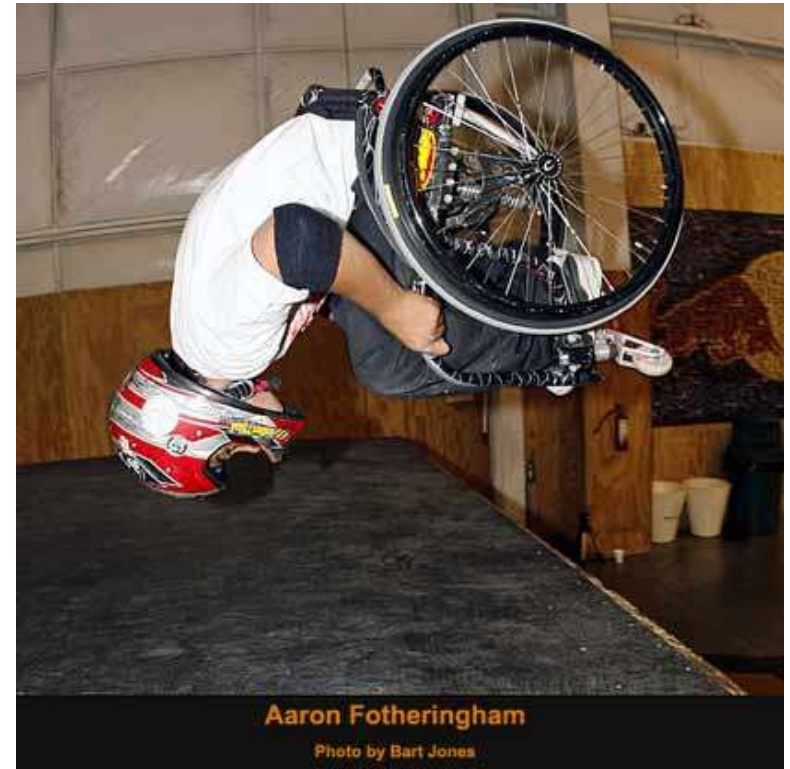


[Video](#)

Somersaults / flips in a wheelchair



[Video](#)



[Video](#)

Tuesday, March 1st



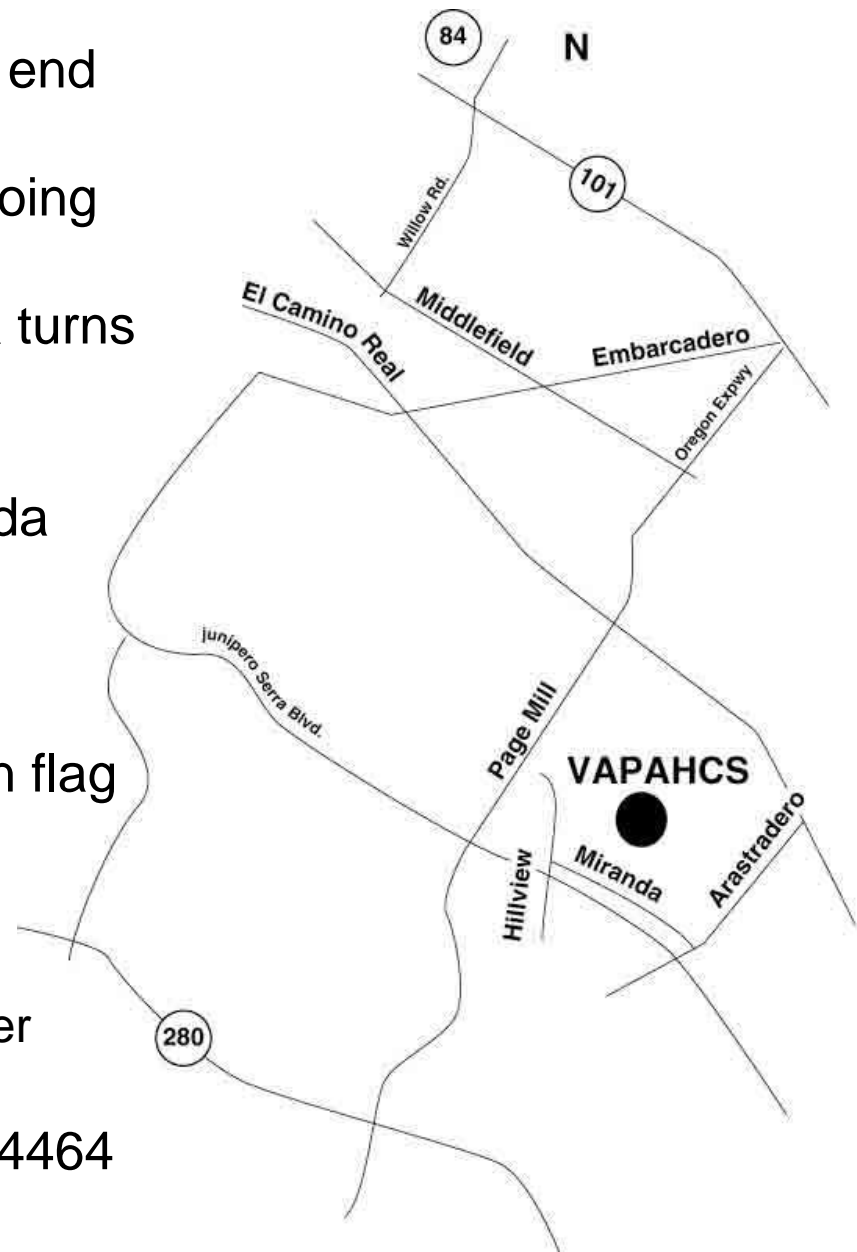
Graham H. Creasey, MD

What Kind of Assistive Technology Do You Need if You Break your Neck?

(Tour of VA Palo Alto Health Care System's
Spinal Cord Injury Service)

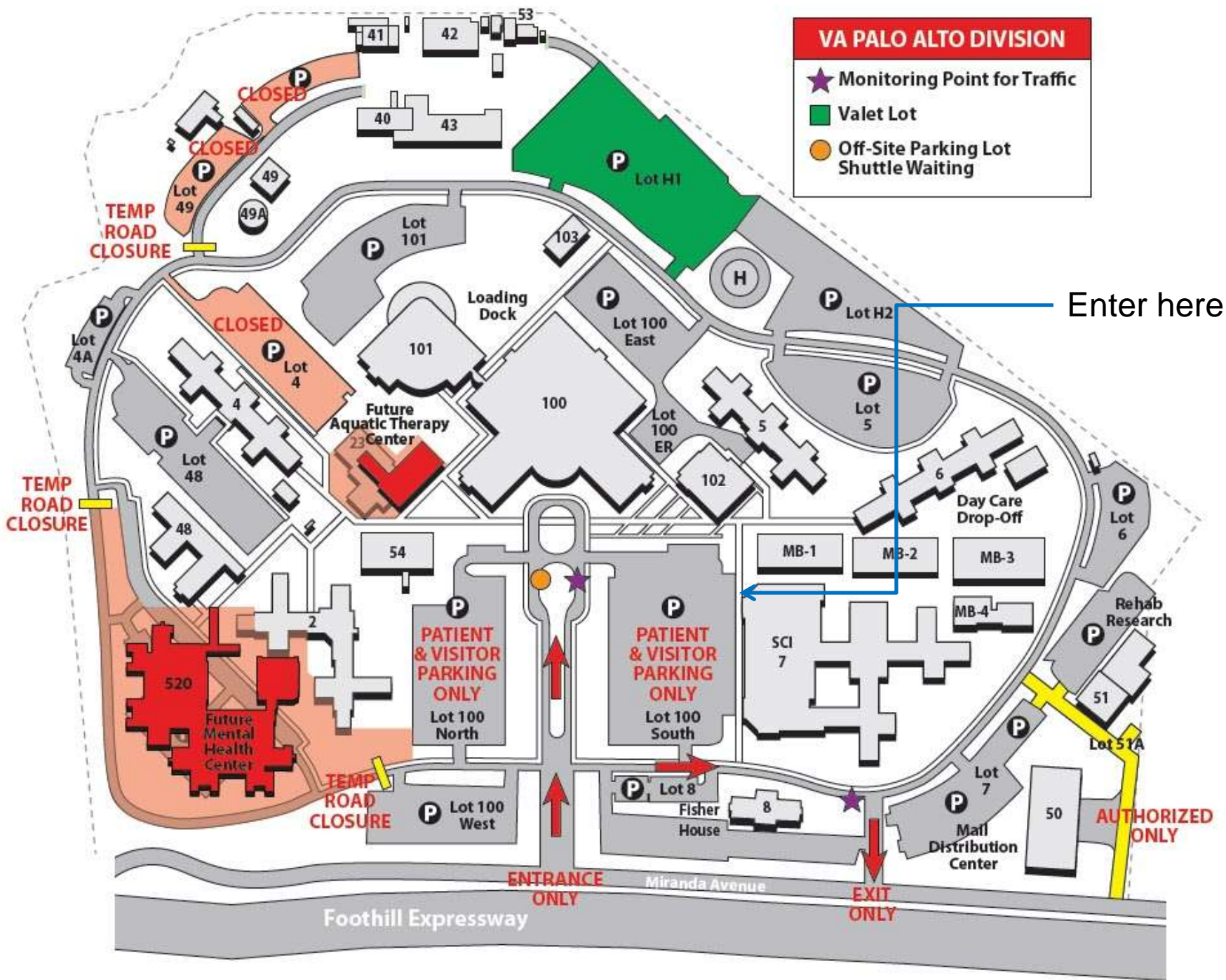
Map & Carpool Signup lists

- Take Campus Drive toward the west end of campus
- Turn left onto Junipero Serra Blvd (going south)
- Past Page Mill Road, Junipero Serra turns into Foothill Expressway
- Turn left at light on Hillview
- Make an immediate right onto Miranda Ave.
- Road curves to the left and parallels Foothill Expressway
- Turn left into VA grounds at American flag
- Park in the large lot on the right
- Enter north entrance of Building 7
- Make way to Room E-111:
 - E-111 is the first one on the right after entering the building
- Lost or late? – call Dave at 650/892-4464



VA PALO ALTO DIVISION

- ★ Monitoring Point for Traffic
- Valet Lot
- Off-Site Parking Lot Shuttle Waiting



Enter here

AUTHORIZED ONLY

Thursday



Chris Bayne and Michael Bayne
**ROTA Mobility Inc.: From
Development to Commercialization**



Today



Ray Grott, MA, ATP, RET
**Practical and Appropriate
Technology Solutions**

Adjourn

