

Founded in 1989

The Post-Polio Support Group of Orange County Newsletter

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January 2010

Salk Institute Breathing and Sleep Symposium Neuromuscular/Respiratory weakness in Post-Polio and other patients

On Nov. 1 2009 the auditorium was full, as those of us who made the trip to La Jolla listened to three experts speak on neuromuscular respiratory weakness, its effects and some treatment options and equipment. The first expert, Dr. Jeffrey Sheean of UC San Diego gave an introductory overview of the various types of typical neuromuscular weaknesses common to Post-Polio, MS, ALS and similar diseases. It was very clear and understandable to lay people and this newsletter will begin a short series of articles, beginning with this presentation, and including additional information presented at the symposium by the other experts to provide our readers with data that may aid in their understanding and seeking interventions as they age and experience additional degradation of the neuromuscular respiratory support structures.

It may not be possible to cover much more than the highlights of the materials covered in the four hour program but a DVD of the entire program is available by request. If you are a vent user, suffer from sleep apnea or similar symptoms, please contact Baldwin Keenan at 949-857-8828 to make arrangements to borrow this DVD. You can also view the symposium at poliotoday.org

RESPIRATORY NEUROMUSCULAR SYSTEM WEAKNESSES

Dr. Geoffrey Sheean,
MBBS, FRACP UCSD

Respiratory systems can be compromised in a variety of ways and for a number of reasons and conditions. The main diagnostic presentations for weakness are: genetic in origin, inflammatory system responses, result of trauma, disordered immune systems or degenerative conditions. And, in addition, any portion of the motor unit of the nervous system which is involved can be affected.

Breathing and its neurological and muscular support systems are primarily controlled by the brainstem, the spinal cord, and nerves leaving the spinal cord, and the diaphragm. If any of these components are affected by one of the above injuries or conditions, there is generally weakness and insufficient ventilation. This insufficiency causes a shortness of breath and more than likely a difficulty in breathing when lying flat. Speaking and coughing could also become affected.

Inside this Issue

Salk Symposium	Pg 1-7
Support Group info	Pg 7
Meetings	Pg 8

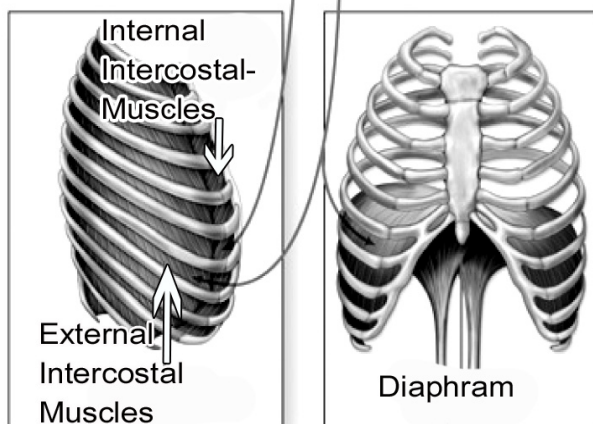
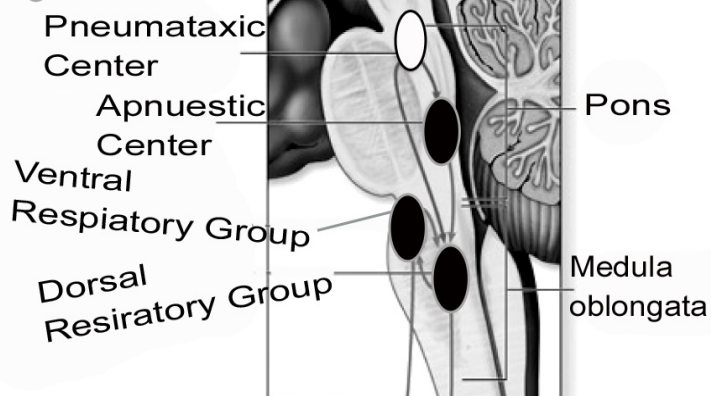
Continued on Page 2

In Slide 1, we see a picture of where in the brain the message to inhale is generated. It then passes down the nervous system via the spinal cord to the diaphragm and lungs. If an injury occurs anywhere in that control mechanism or its pathway, breathing can be inhibited or stopped altogether.



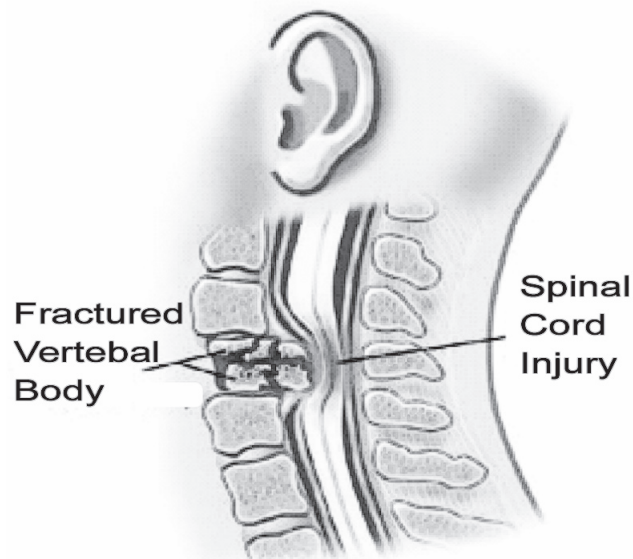
○ Stimulation

● Inhibition

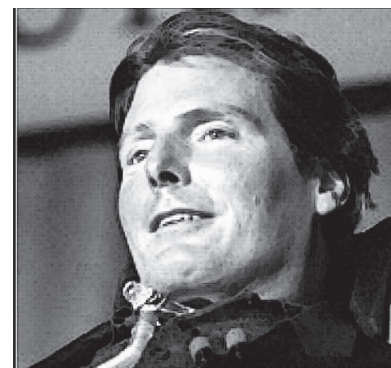


In Slide 2,a, b, & c, we see a well known person who suffered a catastrophic injury to the nerves in his spinal column in a riding accident, which stopped his ability to get the messages from his brain to his diaphragm and lungs to operate on their own and he required an external tracheal system to do his breathing for him after that spinal injury.

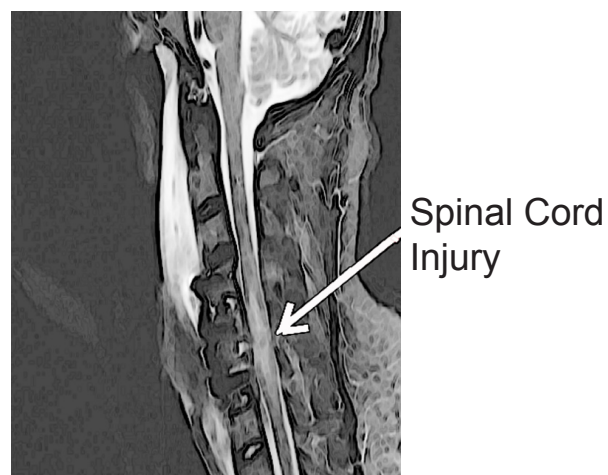
2a



2b

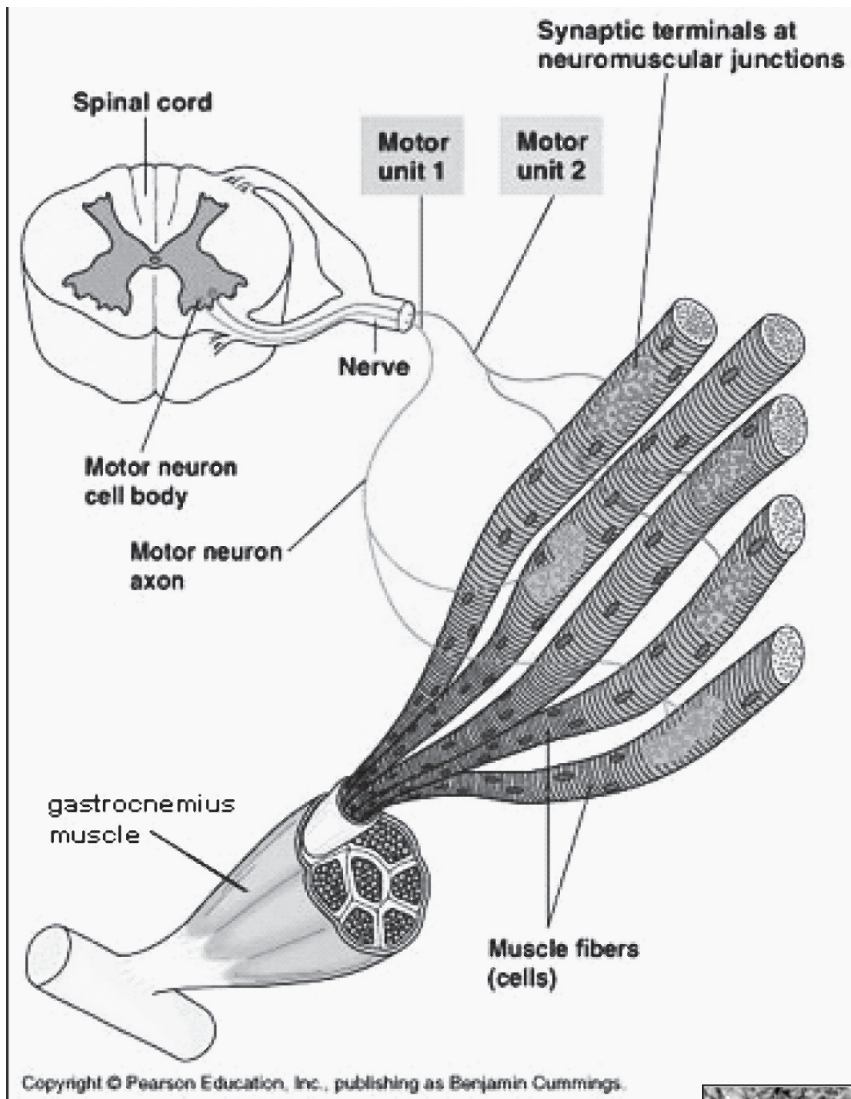


2c

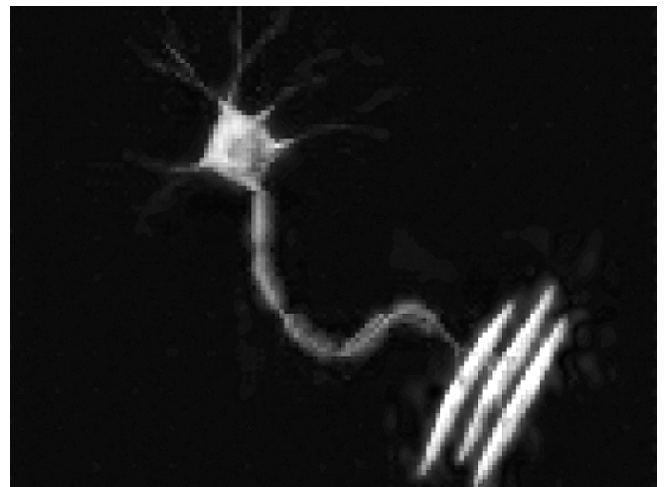


In Slide 3, we get a cross section of the spinal column which shows the anatomy of a motor unit within the nervous system and how they attach to muscles who have gotten the message from the brain to implement a command to function. There are many motor units, each firing messages (synapses) across the nerves to the muscles to impart the commands. In the right side of the slide is an anterior horn cell connection to the nerve.

3

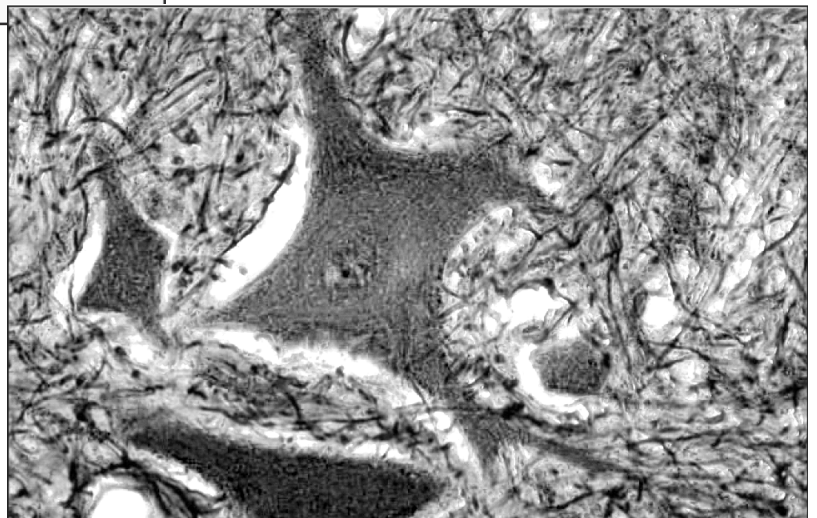


3a



4

In Slide 4, we see a picture of the inside of an **anterior horn cell**. It is these anterior horn cells which are killed off during the acute phase of polio. As you know, some nerves are able to regenerate and find a way to reconnect with orphaned muscles, once again sending messages through those muscles to follow whatever the brain signal instructed.



Polio affected many people in different ways and in different parts of their bodies as we can see in Slide 5. Some people had full body involvement, some people had lung involvement primarily, and others had one or both.

5a

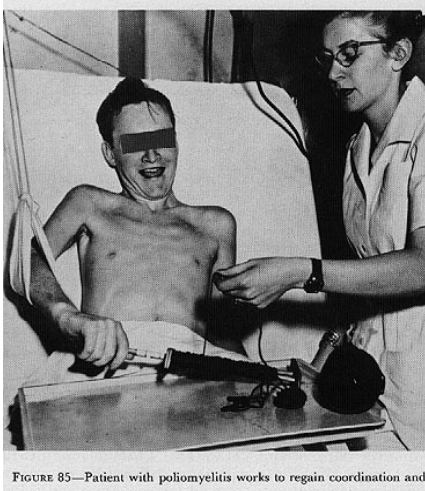


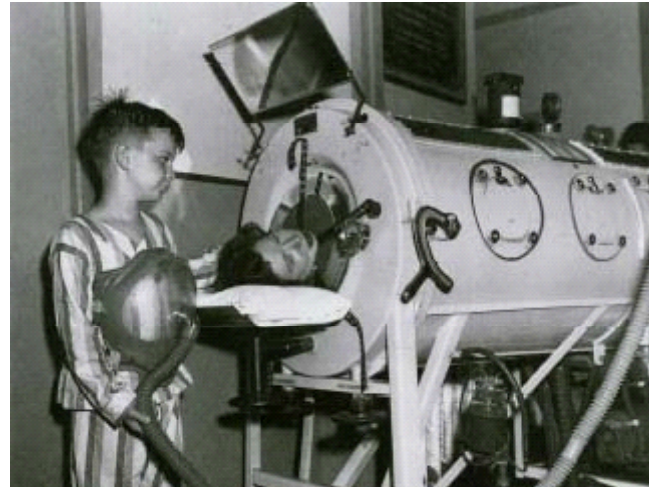
FIGURE 85—Patient with poliomyelitis works to regain coordination and

5b



© CDC

5c

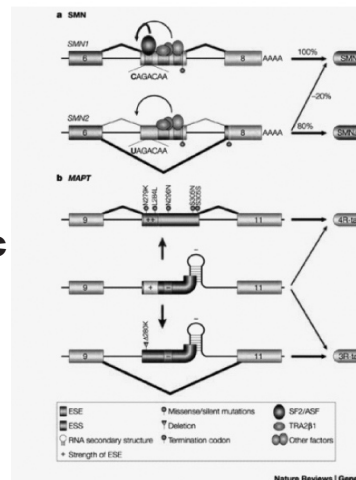


In conditions like Muscular Dystrophy (Slide 6) which attacks the muscles attached to the Spinal Column causes progressively greater muscular incapacitation.

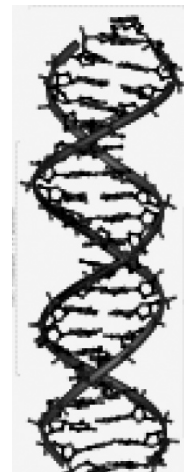
6a



6c



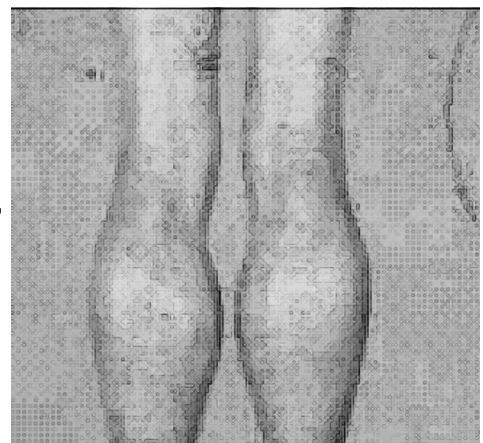
6d



6b



7

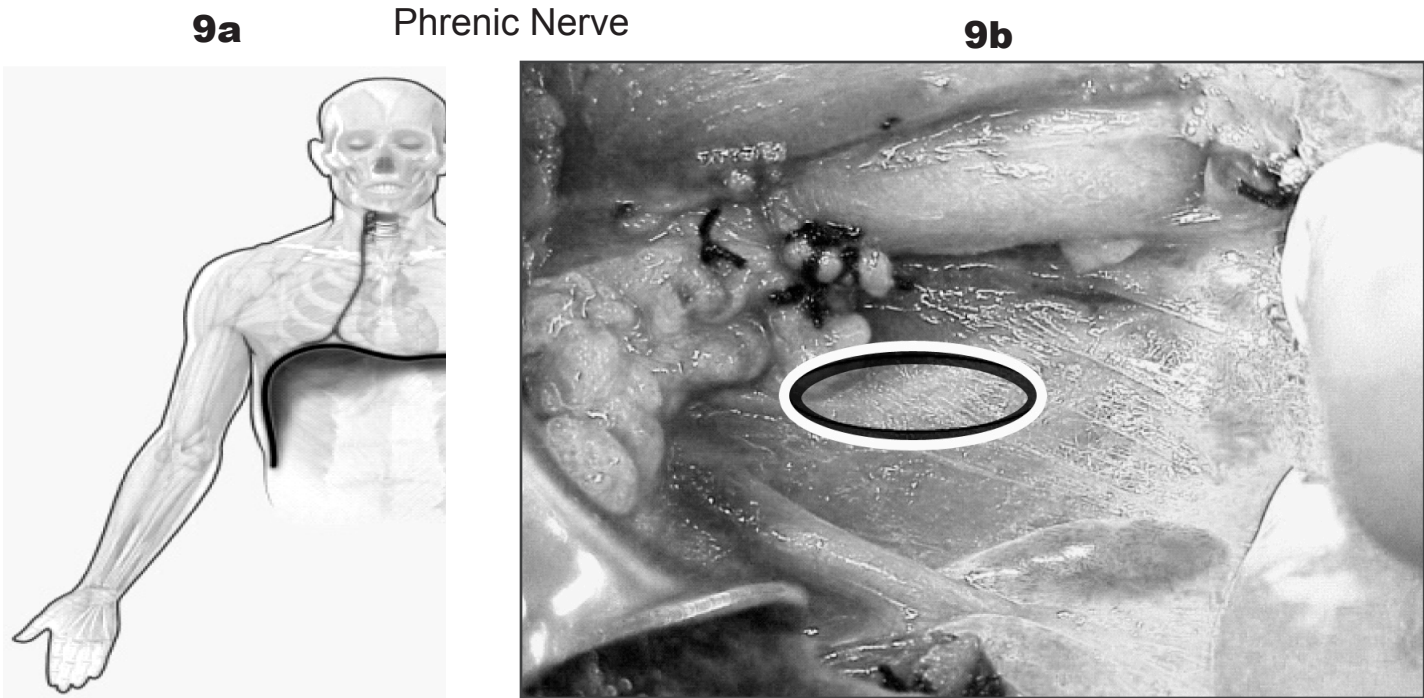


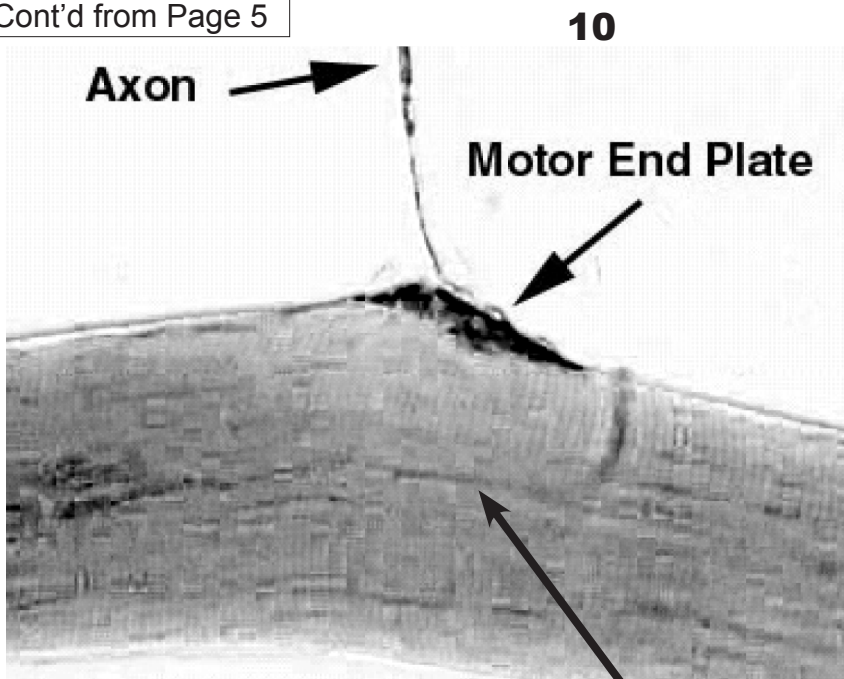
See also Slide 7. You can also see the bulging calves which are common. That large calf is not muscle, however, it is a repository of fat tissue. The muscle is pretty much atrophied

In Slide 8 we see some of the more well-known sufferers of Amniolateral Sclerosis (ALS, commonly called Lou Gehrig’s disease). These people have, over time, and depending on the speed of the progression of the condition, such severely compromised systems that they prove fatal. A notable exception to the normal fast disease progression is Dr. Stephen Hawk- ing, whose brilliance, even within his ALS ravaged body, has been formidable ...spectacular even, given that the usual ALS patient lives less than five years after the onset and diagnosis of the disease.

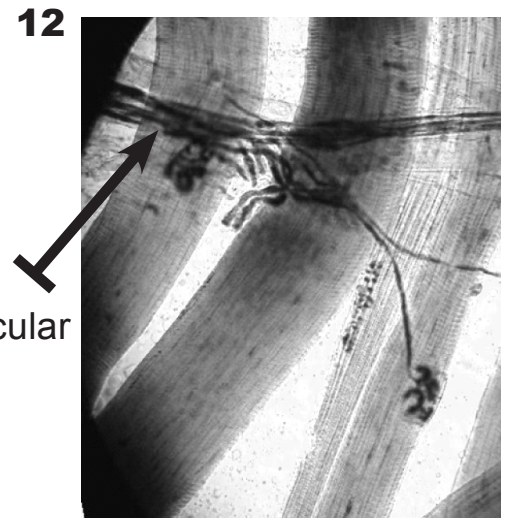
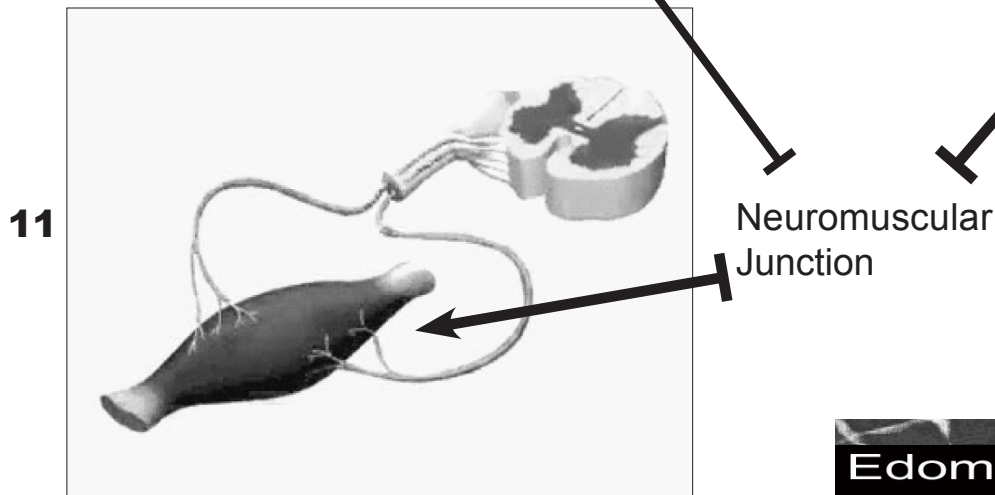


One of the nerves (Slide 9) which regulates the breathing system is called the Phrenic Nerve which tells the diaphragm to contract, which expells the carbon dioxide from our lungs. When the lung is finished with its contraction and rests, the diaphragm, once again goes into a “rest” mode, which actually opens the chest cavity so that it can inhale another breath of air. And so the cycle repeats continuously and we inspire oxygen into our blood stream.

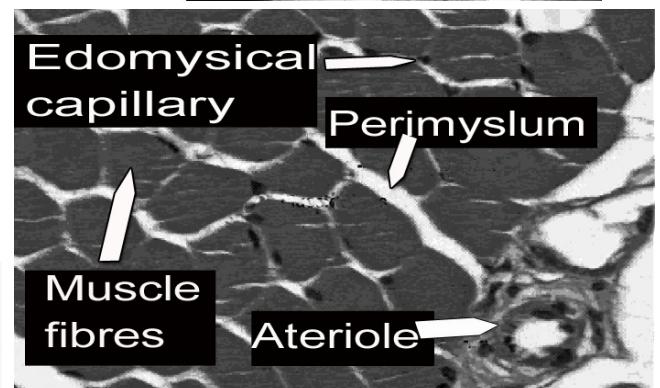




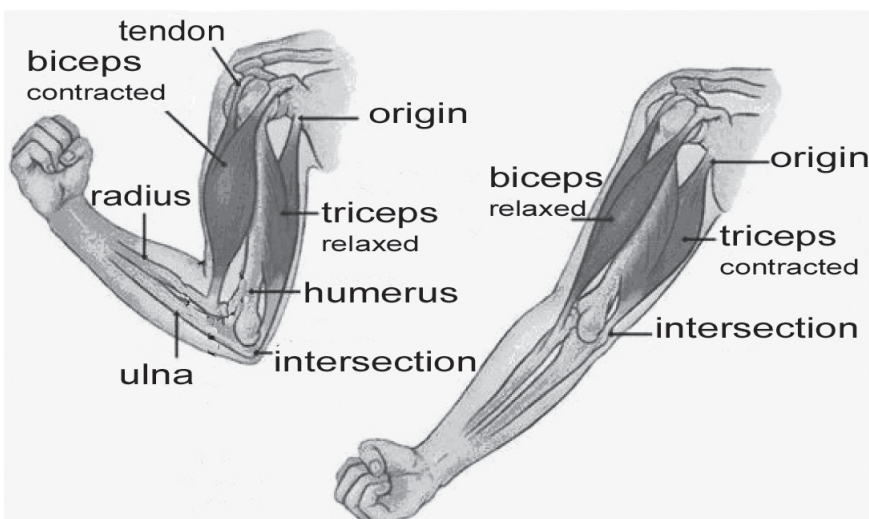
At any point in this system, a nerve or a nerve junction or at a muscle interface, an incomplete process can occur. In Slides 10, 11, 12, and 13 we see the parts of those systems and how they connect to each other. If and when any one piece of that whole breaks down, the entire system suffers or stops functioning.



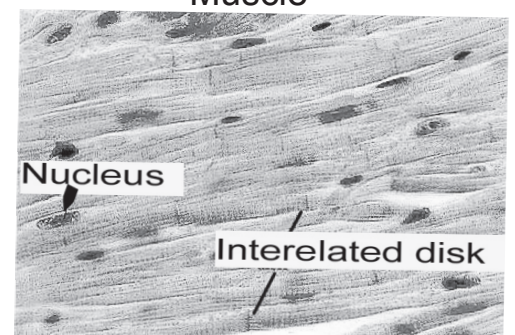
13a



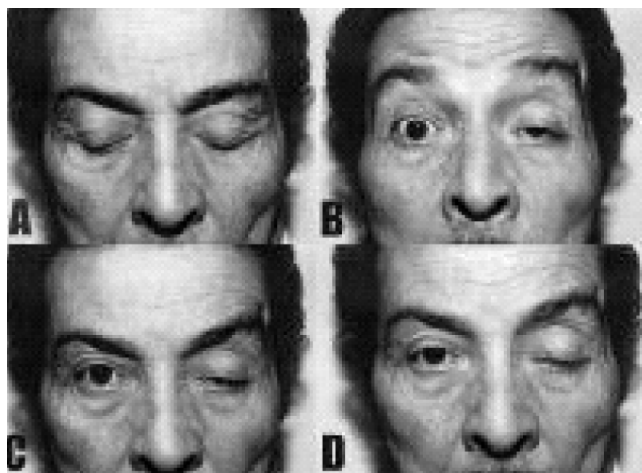
13 Muscle



13b



14a



In addition to the other conditions cited, Polio, MS, ALS, there are others which demonstrate a part or all of the affects we have talked about. **Myasthenia Gravis**, is one. (Slide14a&b)

The Symposium addressed, in addition to the breathing mechanism described, diagnostics and treatments which will be discussed in future issues of the newsletter.

How to contact Rancho Support Group

The Rancho Los Amigos Post-Polio Newsletter is published as a joint venture with the Polio Survivors Association.

For additional information please call Richard at **562-862-4508**

Or email us:

Rancho PPSG@hotmail.com

14b



We may be able to dedicate one of our meetings this year to viewing some of Salk presentations.

YOU CAN VIEW AND HEAR THEM RIGHT NOW at poliotoday.org

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Agenda ideas for PPSG of OC?

Special thanks to the following donors: Jack Delman, Floyd Powley, Helen Li & Dietlind Dodson. . We mention donations but not the amount, as all donations make our support group possible. Please write checks to **Polio Survivors Association** and write "Orange County" in the memo section. Please **mail checks to** Priscilla Hiers, Treasurer PPSG of OC, 18552 Cork Street, Fountain Valley, CA, 92708.

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Rancho Los Amigos Meeting

Jan. 23 2pm - 4pm

Report from 2009 PHI Warm
Springs, GA Conference
by Baldwin Keenan

(See map below)

Future Rancho SG Meetings

Feb. 27
Annual Pot Luck

March 27
To be determined

Orange County Meeting

FINGER FOOD POTLUCK SOCIAL

Saturday January 9 - Bring your favorite
dish to share

2PM in Villa Park City Council Chambers
(See map below)

Future PPSG of OC Meetings

February 15
Yoga for Post-Polio patients

Video from John P Murtha
Neuroscience and Pain Institute with
instruction from Yoga trainer Dolly Lai.

March 14
To be determined

