
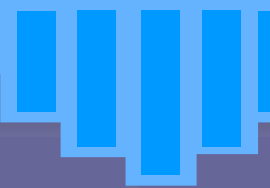


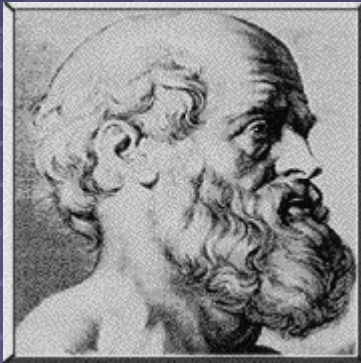
The Athletic Trainer, Strength and Conditioning Professional, Chiropractor and Massage Therapist all share a physical medicine heritage in western civilization.



Short History of Western Medicines: Physical vs. Chemical Heritage and the Muscular Skeletal System.



The Two Biggest Names in Medical History

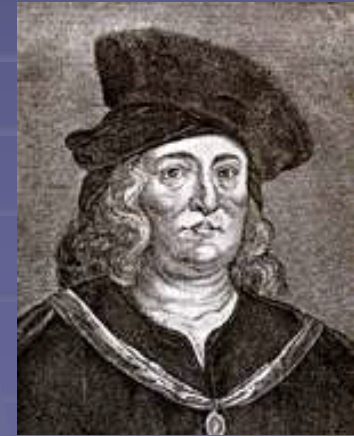


Hippocrates – 400 B.C.

The Father of Physical Holistic
Medicine

Paracelsus – 1500 A.D.

The Father of Chemical
Pharmaceutical Medicine



Graduating doctors and nurses take the Hippocratic Oath:

Achieve health with the proper muscular skeletal system and proper diet, no drugs, surgery with knives or abortions. See the original Hippocratic Oath at <http://www.med.virginia.edu/hs-library/historical/antiqua/texto.htm>

Hippocrates said you need better posture and diet to be healthy.

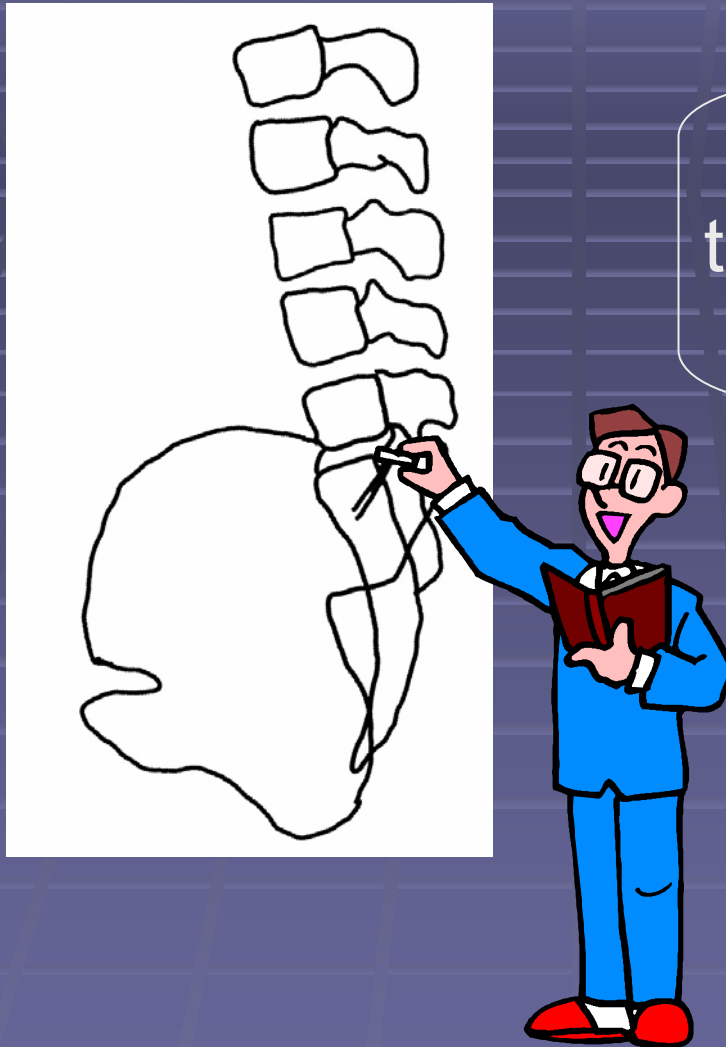


Hippocrates uses natural treatments. Surgery was accomplished by hands and bandages. See Hippocrates Corpus: <http://classics.mit.edu/Browse/browse-Hippocrates.html>.

Your dislocation has an infection. We will splint it and use a pitch and wine compress.



Hippocrates treats subluxations by manual means.



We need to adjust
this subluxated bone
off the nerve.

See "on the articulations"
in Corpus
[http://classics.mit.edu/
Browse/browse-
Hippocrates.html](http://classics.mit.edu/Browse/browse-Hippocrates.html)

Subluxation: an incomplete or partial dislocation.

From: Dorland's Illustrated Medical Dictionary, 25th Ed. W.B. Saunders, Philadelphia, 1974.

Hippocrates: Pain and swelling associated with inflammation (healing process) in ligaments and joints prevent movement.

Such cases are to be treated by compresses and plenty of bandages (to stop movement) and aid natural healing.

See Hippocrates Corpus

<http://classics.mit.edu/Browse/browse-Hippocrates.html>



An appliance that stops the movement helps the natural healing process.

For more information on the inflammatory process search the web or go to the following to see Hippocrates's thinking on inflammation:

See under "understanding the healing process"
<http://www.cofc.edu/~futrellm/healing.html>

NSAID's and Musculoskeletal Treatment by Steven D. Stovitz, M.D. and Robert J. Johnson, MD.
[Http://www.chiro.org/LINKS/DISCONTINUED?NSAIDs and Musculoskeletal Treatment.html](Http://www.chiro.org/LINKS/DISCONTINUED?NSAIDs_and_Musculoskeletal_Treatment.html)

Aristotle – 350 B.C.

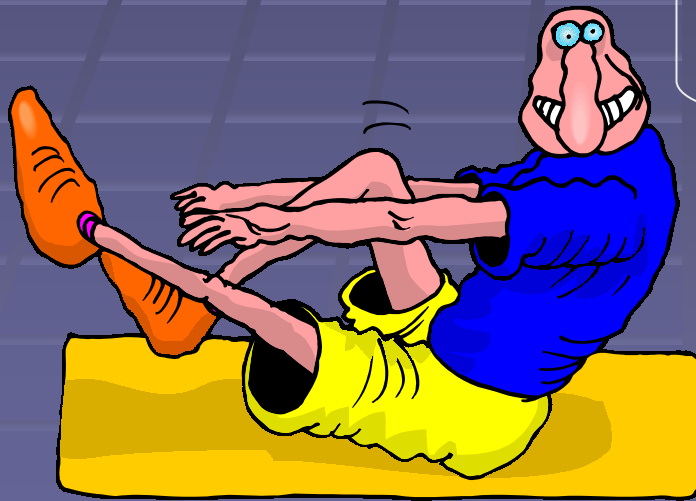
The Father of Kinesiology

Aristotle studies the muscular skeletal system of bipeds and quadrupeds and asks questions like, “Both men and birds walk on two legs, yet why do their legs bend in opposite directions?”



See “On the gait of animals” works of Aristotle
<http://classics.mit.edu/Browse/Browse-Aristotle.html>

Aristotle questioned the value of exercise. “The exercise of walking is said to produce better health, or does the possession of better health produce the ability to walk? If walking does not produce better health, then walking would be in vain.”



See “Physics” works of Aristotle

<http://classics.mit.edu/Browse/Browse-Aristotle.html>

Aulus Cornelius Celsus (3 AD – 64 AD) is considered to be the greatest Roman medical writer.

In his work *De Medicina*, there are comments on the virtues of both physical and chemical medical practices. He is also famous for recommending cleanliness and washing wounds with antiseptics.

http://www.hyperhistory.com/online_n2/people_n2/persons3_n2/celsus.htm

Celsus from *De Medicina*: “I am of the opinion the Art of Medicine ought to be rational. Hippocrates uses diet only and Herophilus uses drugs only. In most cases, diet is a more useful method. Nearly all drugs harm the stomach and contain bad juices, yet many times, illnesses cannot be cured without medicine. Be guided by reason. If their methods restores sick folk to health, then no one should be derogatory to either in argument or in authority.”

Aulus Cornelius Celsus, 20 AD. See his works *De Medicina* F. Marx (Teubner 1915, Loeb 1938) (LacusCurtius) English by W.G. Spencer (Loeb 1938)
<http://www.forumromanum.org/literature/celsusx.html>

Celsus Addresses the Spinal Muscular Skeletal System and it's Treatment

“Vertebrae will dislocate and rupture nerves and sinews that hold them together. Hippocrates adjusts these bones back into place if displacement is not total.”

Aulus Cornelius Celsus, 20 AD. See his works *De Medicina* F. Marx (Teubner 1915, Loeb 1938) (LacusCurtius) English by W.G. Spencer (Loeb 1938)
<http://www.forumromanum.org/literature/celsusx.html>

Galen 200 A.D.

The Father of Sports Medicine
He was the doctor to gladiators.



Oxford Handbook of Sports Medicine

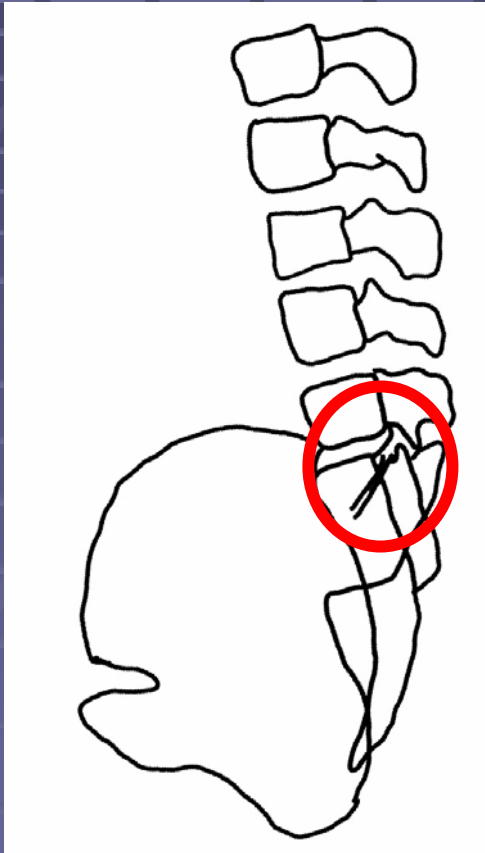
<http://www.worldortho.com/oxsportsmed/chapt1.html>

History of Biomechanics and Kinesiology

<Http://www.usd.edu/~jarichar/HIST.html>

Galen

The Father of Experimental Physiology



Galen studies how the brain sends messages through nerves that exit the spine to control body parts. He cuts nerves as they emerge from the cervical spine and demonstrates paralysis of muscles and loss of voice.

<http://www.med.virginia.edu/hs-library/historical/antiqua/galen.htm>

Galen on anatomical procedures

<http://info.med.vale.edu/htherarad/summers/galen.htm>

Hippocrates describes poor postures and the poor health they cause. Galen calls these postures scoliosis and kyphosis.



Galen says I have kyphosis and it is not healthy.

Idiopathic Scoliosis, By John T. Stinson, M.D.,
F.A.C.S. <http://www.orthoctr/doc8-pl.html>



Physical medicine is the traditional medicine for 1400 years. The decline of physical medicine begins with the arrival of Theophrastus Phillippus Aureolus Bombastus von Hohenheim, better known as Paracelsus, who was a medical lecturer at the University of Basel in 1527.

At the time of Paracelsus, medicine still held two different views:

Natural physical medicine followed Aristotle, Galen and Hippocrates. This school of thought followed traditional medicine at the time and relied on mathematics and physics of motion to understand man.

Chemical Medicine, as found in texts like *Corpus Hermeticum* sought the relationship of man to the macrocosm and turned to chemistry to understand man. Paracelsus followed this line of medical thinking.

Paracelsus and the Medical Revolution of the Renaissance, 500th Anniversary Celebration. By: Allen G. Debus, Morris Fishbein, Professor of History of Science and Medicine, University of Chicago.

http://www.nlm.nih.gov/exhibition/paracelsus/paracelsus_2.html

Paracelsus was an Alchemist. Alchemists look for a panacea for ills and an elixir for immortality.

Take this and you will feel no pain and live forever.

Great! This is what I have been waiting for.



<http://www.elish.upenn.edu/~jlynch/Frank/Contexts/alchemy.html>

He takes on the name Paracelsus to indicate he is beyond or greater than Celsus. Some writers state that he is referring the Celsus the physician, <http://www.crystalinks.com/paracelsus.html>, or Celsus (178 AD) a famous anti-Christian writer, <http://www.parascience.org/paracels.html>, because he criticizes church, prayer and church going, <http://www.wisdomworld.org/setting/paraselsusone>.

Celsus...who?



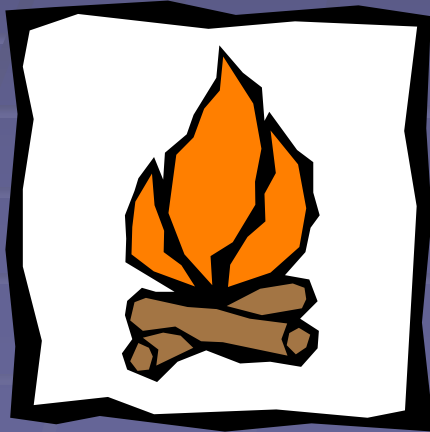
Galen remains the medical authority for 1000 years. Also, with his belief in one God, his works find favor with Arab, Christian and Hebrew scholars. To criticize his works is considered heresy.

Paracelsus, however, is not deterred by any authority.

<http://www.parascience.org/paracels.htm>

<http://www.med.virginia.edu/ht-library/historical/antiqua/halen.htm>

Paracelsus, unlike “Celsus the Physician” has no tolerance for physical holistic medicine. He burns Galens works in public places. Physical medicine persecutes him and he leads a wanderers life.
<http://www.wisdomworld.org/setting/paracelsusone.html>.



Throw one of
Galen's books on!!



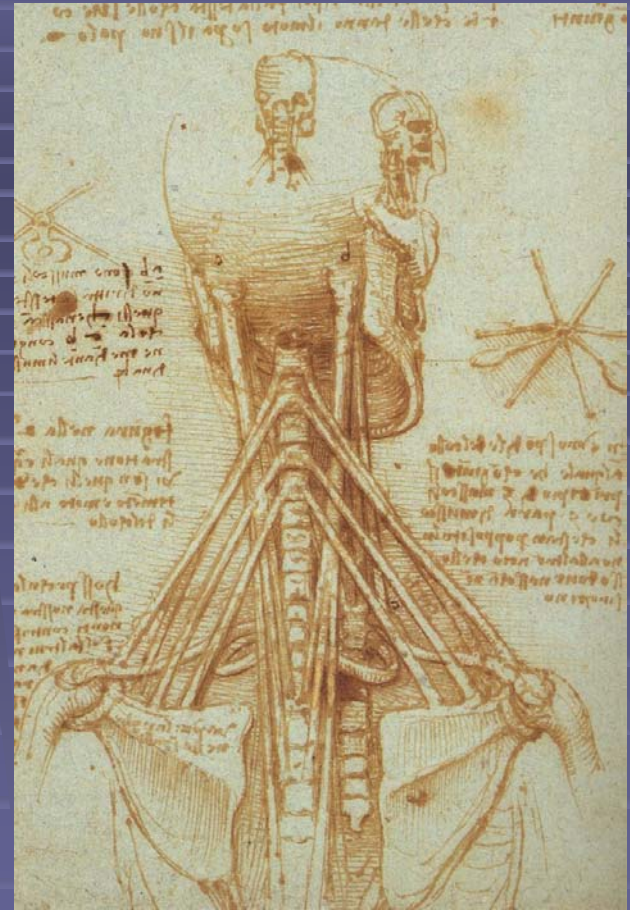
In the 1500's, Leonardo da Vinci (1452-1519) researches the physical medicine side of man.

“Human life ends from the accumulative effect of the concussion of physical forces.”

Leonardo da Vinci *Artabras* Book, Reynal and Company in association with William Morrow and Company, copyright Istituto Geografico de Agnostini, Novara Italy.

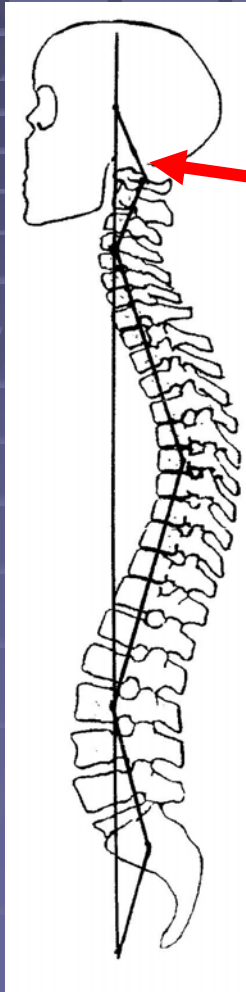
He studies the neuro-muscular skeletal system.

da Vinci states the spine is a lever system that produces movement by leverage.



Leonardo da Vinci *Artabras* Book, Reynal and Company in association with William Morrow and Company, copyright Istituto Geografico de Agnostini, Novara Italy.

Leonardo discovers the spine of humans should be S-shaped and the origin of life centered in the brainstem.



The origin of life is in the nervous system located at the top of the spine.

Leonardo da Vinci *Artabras* Book, Reynal and Company in association with William Morrow and Company, copyright Istituto Geografico de Agnostini, Novara Italy.

Diagram modified from Introduction to Spinal Biomechanics, Pettibon, B.R., 1989.

In 1599, Benedetti discovers the effective effort arm and for the first time in the history of muscular skeletal study, medical technology develops methods to find the true force produced by muscle.



How much muscle effort must be produced? Since the time of Archimedes, everyone thought it was where the muscle attached back to the joint. Benedetti showed it was the perpendicular distance from the muscle back to the joint.

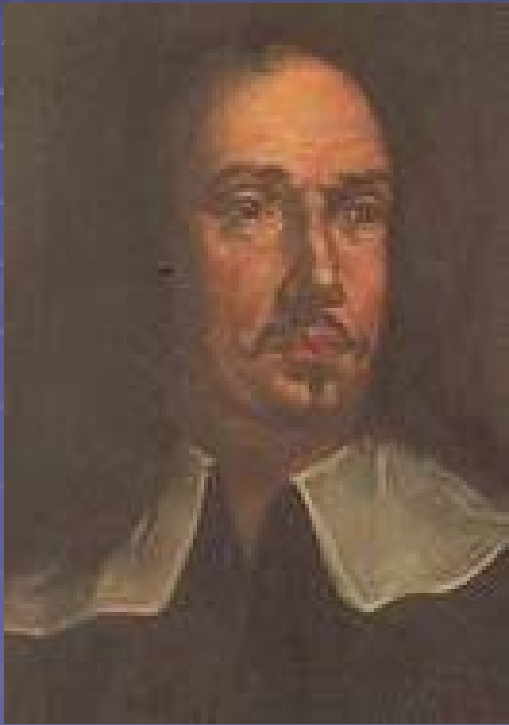
In 1660 Giovanni Alfonso Borelli develops technology to finally show the total amount of muscle effort required and then produced into joints when lifting a weight.



Picture from *De Motu Animalium* (1680), by Giovanni Borelli.

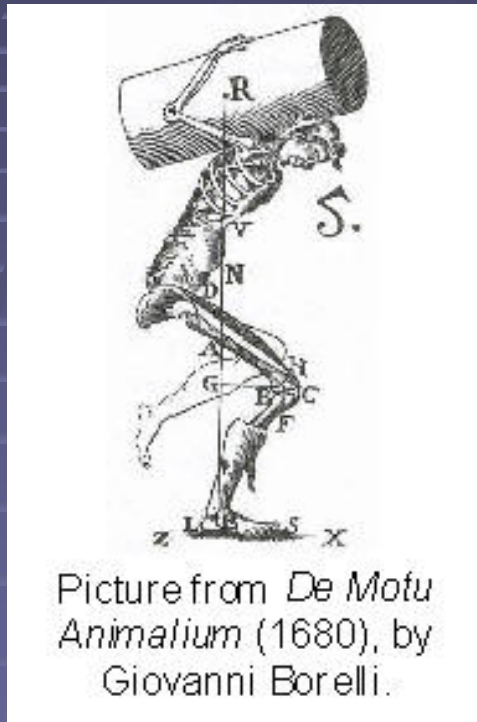
Borelli showed it takes over 25,000 lbs. of muscle effort and forces created into joints to hold up 100 lbs. in this position.

His physical medicine work centering on mathematics and physics of motion to understand the spine still stands today. This work earned him the title of the Father of Biomechanics.



The American Society of Biomechanics' most prestigious award is named after Borelli. <http://www.asb-biomech.org/conference/conference.html>

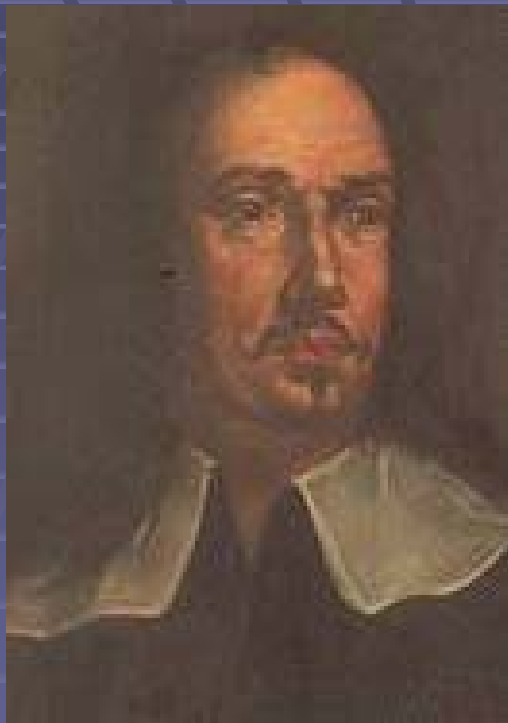
People suspect certain exercises or lifting wrong will hurt the back. Borelli's technology was the first to actually show why the forces at work strain muscles and joints.



Do not lift like this because of the severe muscle strain and forces into the discs.

Abhay Sanan, M.D., Setti S. Rengachary, M.D., Department of Neurosurgery, University of Minnesota Hospital System, Minneapolis, Minnesota.

<http://www.c3.hu/~mavideg/ns/Sananetal.html>



Borelli states the spine lifting in this position is a “wasteful machine”. “Since the time of Archimedes, medicine thought the spine had good levers, but it does not – Please look at my work, I have proof!”

Nobody looks.

Abhay Sanan, M.D., Setti S. Rengachary, M.D., Department of Neurosurgery, University of Minnesota Hospital System, Minneapolis, Minnesota.

<http://www.c3.hu/~mavideg/ns/Sananetal.html>

Borelli's technology disappears from medicine for 300 years as chemical medicine is "in" and physical medicine is "out".



2000 years of physical medicine finally reaches this level of technology, but nobody cares.

Abhay Sanan, M.D., Setti S. Rengachary, M.D., Department of Neurosurgery, University of Minnesota Hospital System, Minneapolis, Minnesota.

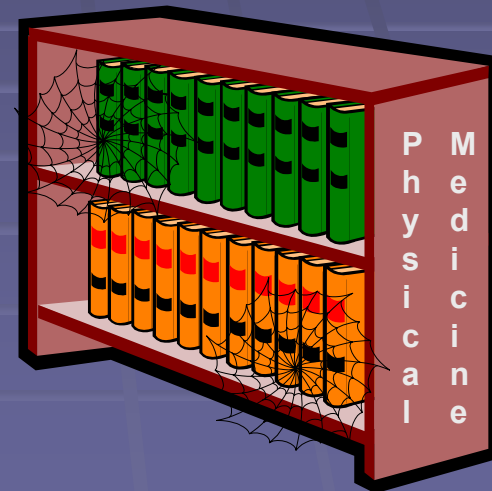
<http://www.c3.hu/~mavideg/ns/Sananetal.html>

For the next 300 years no one cares about physical medicine and learning how the muscular skeletal system works.

We've found a new cure!!



Muscular skeletal study collects dust.



Physical medicine begins a comeback in the 1900's mainly due to Sports Medicine and Chiropractic.





In the 1900's, the public interest in sports just keeps getting bigger and bigger.



In 1896 the International Olympic Games begin and professional sports becomes a business.

In sports it is known that a strong, healthy muscular skeletal system is key to being a good athlete.



Strong muscles and healthy joints are necessary to be good at sports.

Sports is a world of hard reality.

Roll him off and get someone
in there that can run!



Chemical medicine is interested in your pain,
sports is interested in can your muscular
skeletal system catch the ball or not!

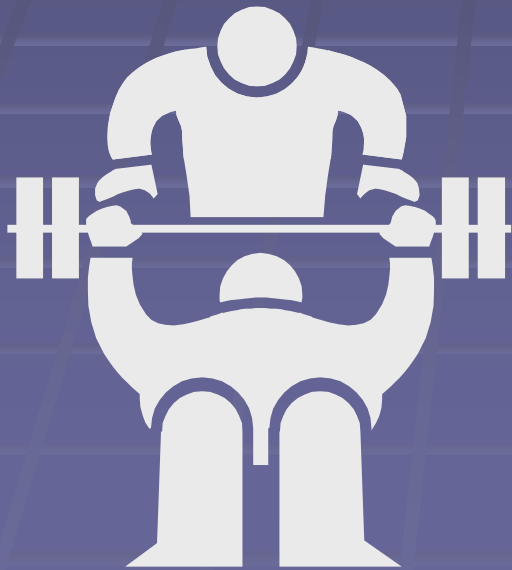
The hard reality of sports.

If that knee is still weak, we are going to trade you.



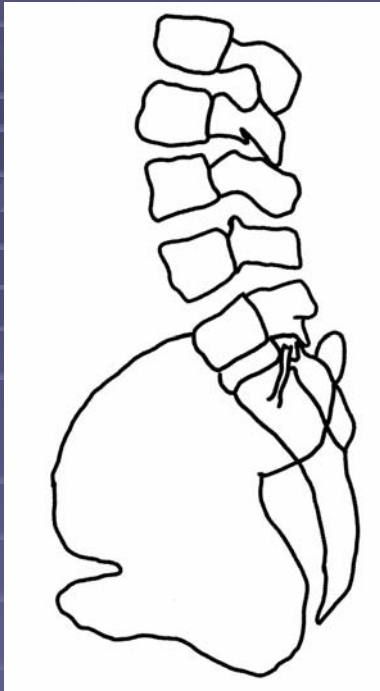
The hard reality of sports creates two new physical medicine professions:

The athletic trainer.

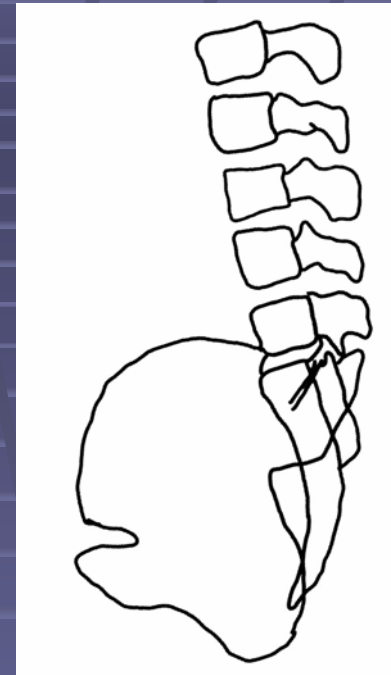


The strengthening expert.

The athletic trainer's job is to keep the muscular skeletal system healthy.

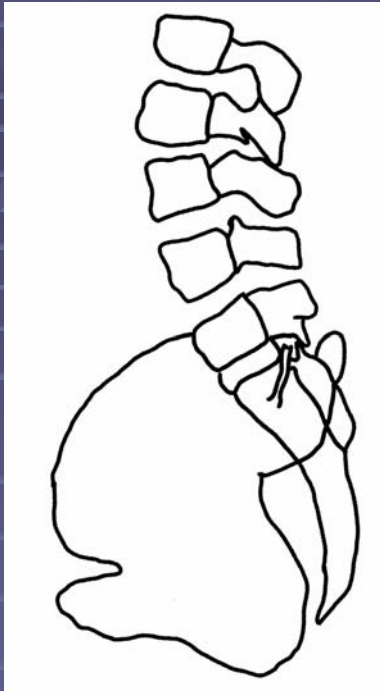


This spine is good. It flexes, has agility, and can develop strength through a wide range of motion.

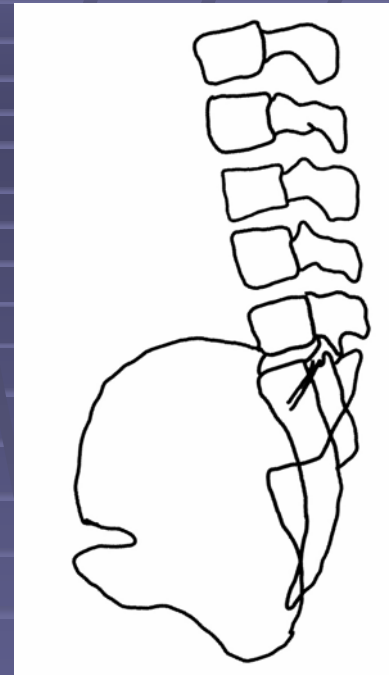


This spine is bad. The forces jar down the spine making it stiff and weak. There is no agility and the discs are bulged and the nerves pinched.

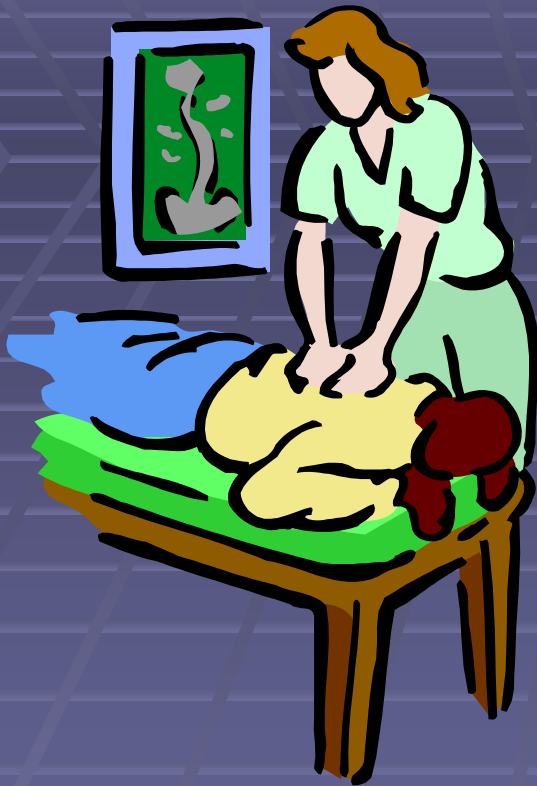
Strength and conditioning's job is to make the muscular skeletal system stronger and perform better.



This spine can be physically trained, build muscle, perform sprints and jumping exercises.



Jumping will jar this spine. It can build muscle, but it will be stiff and ineffective. The proper structure must first be restored to this spine.



Massage as a therapy and as a profession becomes a more popular method to maintain natural health of the muscular skeletal system.

Therapeutic massage

<http://www.wellnessworkers.com/theraput.htm>

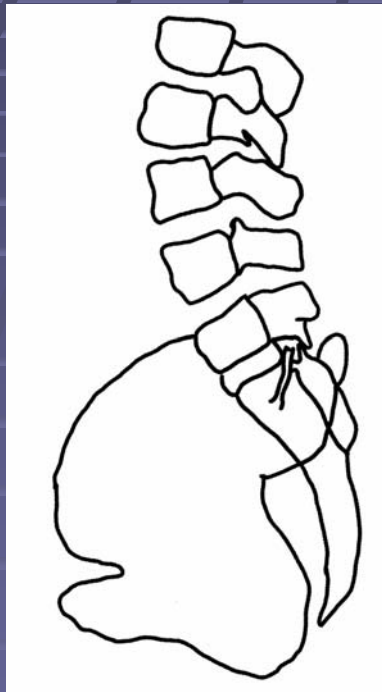
Web MD

<http://www.ivytree.com/images/WebMD%20-%20Massage%20Therapy.htm>

Historic review of massage therapy

<http://www.eamg-med.com/alternative/historic.shtml>

A new science called biomechanics studies how the muscular skeletal system works as a physical structure.



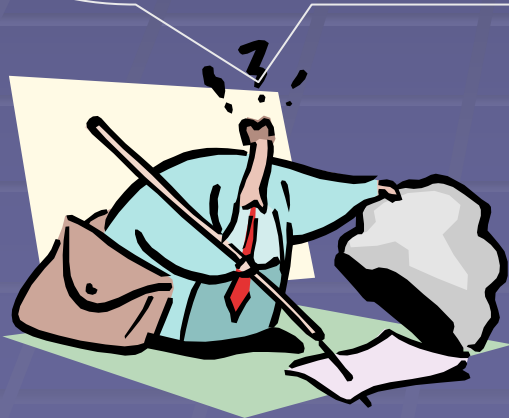
We want to know how this works.

Biomechanics studies pick up where it ended with Borelli in 1660.

Biomechanics:

Defines Borelli's technology. Study of forces impacting the muscular skeletal system, forces produced by the muscular skeletal system and then how these forces impact the joints within the muscular skeletal system.

It's all in getting the correct leverage.



This definition is by Jim Hayes, 1973, University of Iowa, who is considered the Father of Modern Biomechanics. He adopted Borelli's technology of leverage force analysis.

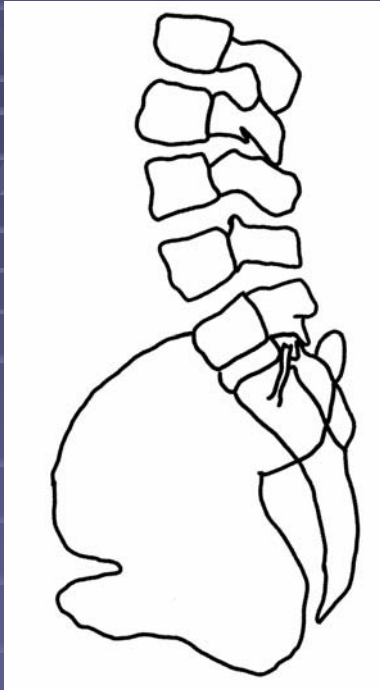
The technology used by Borelli however is essentially lost. It will take into the 21st century before technology that can perform muscular skeletal leverage for analysis is developed and taught.



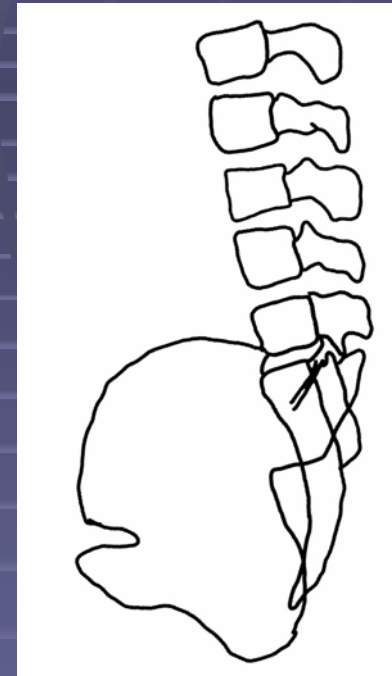
Picture from *De Motu Animalium* (1680), by Giovanni Borelli.

It took 2000 years to reach Borelli's technology. Modern physical medicine will do it in 30 years.

Chiropractic begins in 1895 following the strict 2000 year old physical medicine tradition.



Why this spine is good.

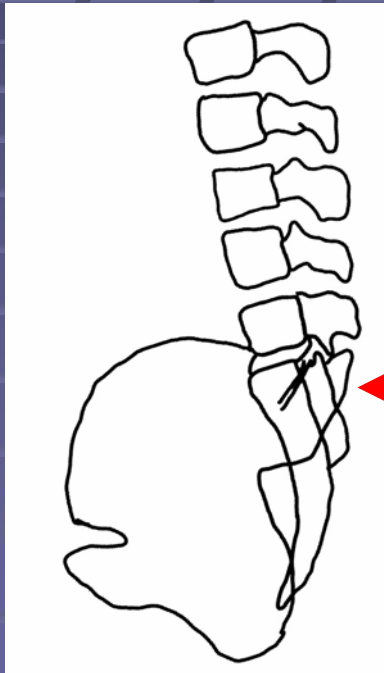


Why this spine is no good.

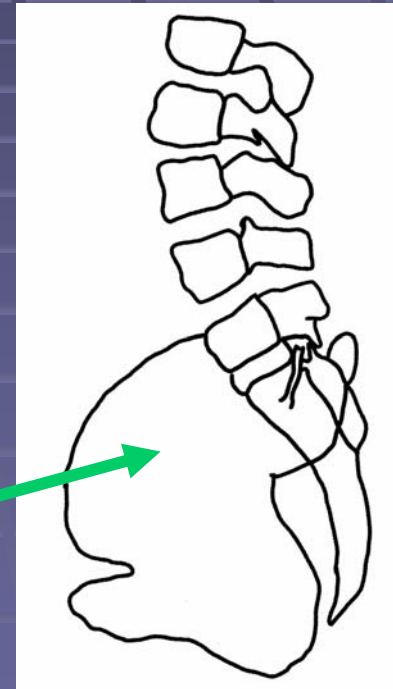
Studies the muscular skeletal spinal system as it provides for human movement and protection of nerves.

Chiropractic adopts Hippocrates's physical medicine oath. The biomechanically weak muscular skeletal spine must be made stronger by using natural orthopedic means.

Improper Posture



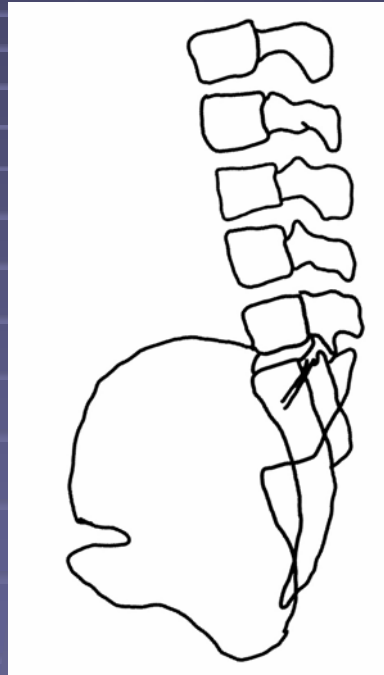
Proper Posture



Treatment by natural means takes the bad spine and achieves the good one.

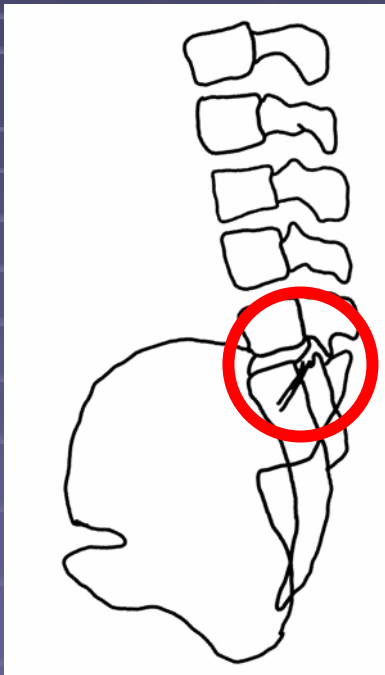
Chiropractic forbids pharmaceutical teaching in their schools.

The public becomes slowly educated as to how physical and pharmaceutical medicine will diagnose and treat the same injury differently.



A lower back injury will look the same on X-ray, but it will get two different treatments.

Physical medicine treatment's first priority follows Hippocrates's rule of working with the inflammation process to speed healing.



The disc is in pain and swollen from injury.

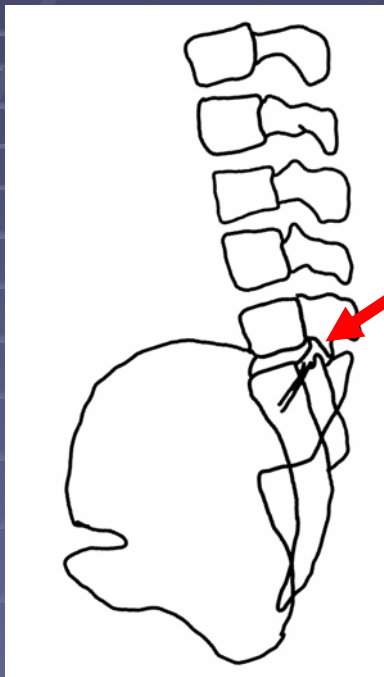
Pain and swelling are stopping the movement so the injured tissue can proceed through the acute inflammation process and heal naturally as soon as possible.

Physical medicine, recognizing the inflamed tissue has lot its specialized function aids the body to heal by stopping physical movement and stabilizing the injury.

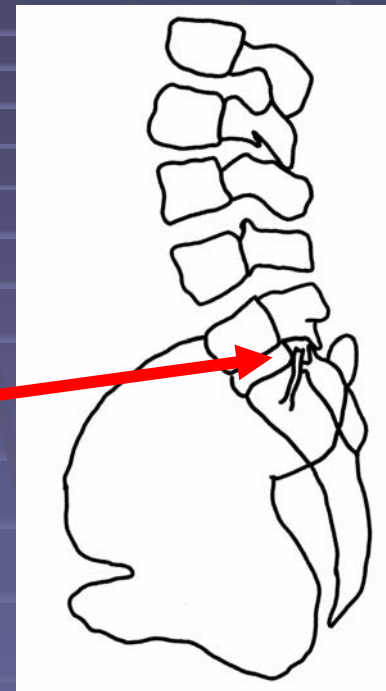


The use of splints or bandages stop movement and stabilize the movement and therefore actually help get over the injury.

The physical medicine of Hippocrates, da Vinci, Borelli and Galen sees the muscular skeletal system that needs to be made right.

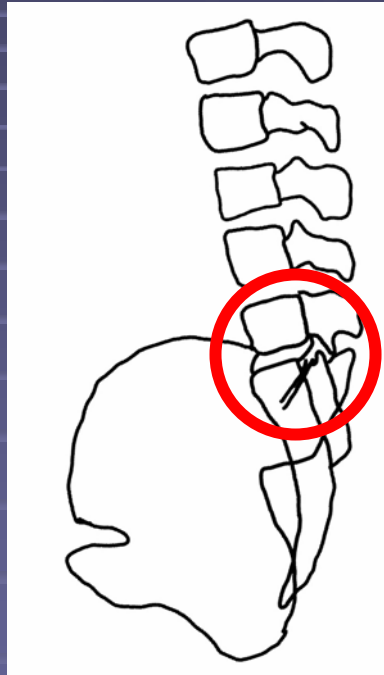


This bad back needs to be a good back.



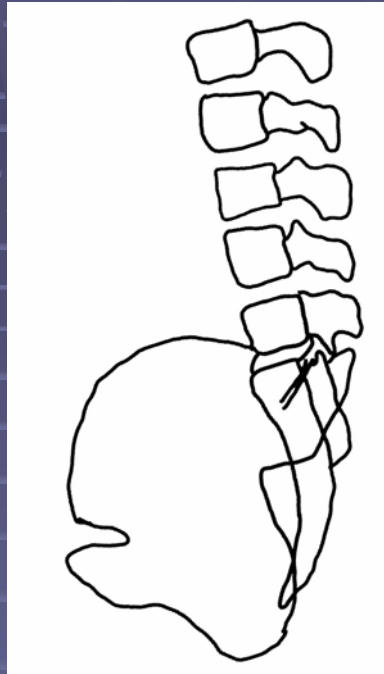
Sees the biomechanically weak, injury prone joint that will never work properly again unless treatment makes it biomechanically correct.

Physical medicine sees the biomechanical weakness
(Chiropractors, massage therapists, trainers).
Globally a straight spine is stiff and movement strains
joints.



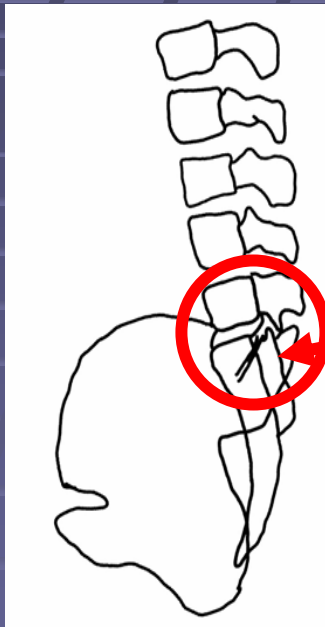
Segmentally, a bone out of place is pinching into the
spinal canal. The disc fibers are stretched and
weakened and will degenerate. Nerves that are
pinched will not work on the parts they supply.

Chemical medicines treatment's first priority is ending the patient's pain sensations.

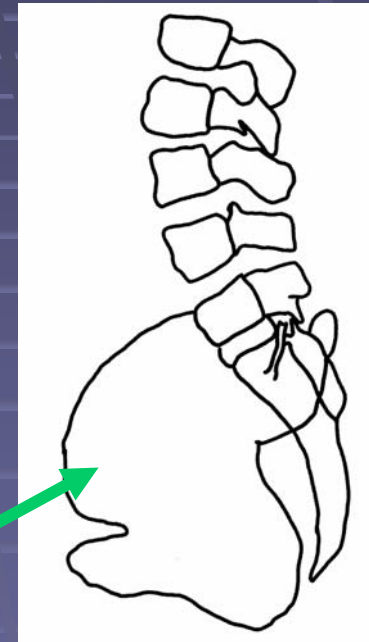


Pathology knows pain actually aids the natural inflammation healing process, however, pharmaceutical medicine is more concerned with the pain causing patient distress than the healing process. Their priority is giving anti-inflammatory and pain killing drugs.

When the biomechanically weak back continues to cause pain, chemical (pharmaceutical) medicine is not trained to think that physical medicine treatment can aid in achieving resolution.



Chemical medicine is not trained to think that this one needs treatment that will make it like this one.

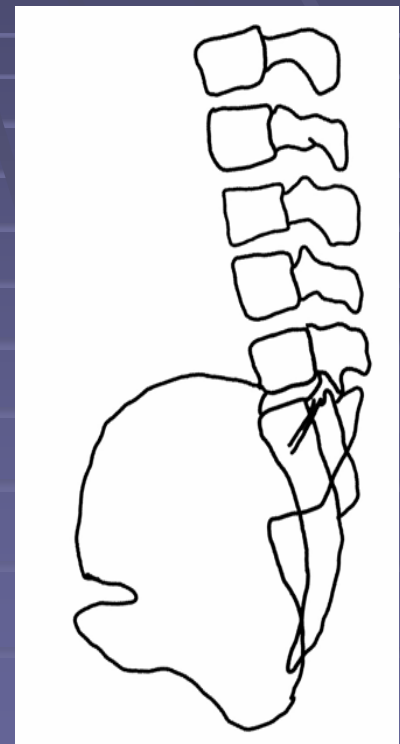


The next solution chemical medicine takes is to fuse or cut out the “bad parts” instead of considering a physical medicine specialist.

Chemical and physical medicine working together, in the tradition of Celsus, applying common sense.

This injured person needs something to relieve intense pain.

They also need an appliance to stop movement so they can heal quickly. If they heal with this improper spinal posture, however, their back will stay bad and may require surgery some day. They need a physical treatment program that will give them the correct muscular skeletal posture so they can stay “good as new”.



The health practitioner and patient of the future can educate themselves to discern the best treatment to complement the circumstances. To think as Celsus wrote: “The art of medicine ought to be rational. Both physical and chemical medicine help people and no one should be derogatory to either in argument or in authority.”

