

***physical medicine &
rehabilitation & Rheumatology
or physiatry (rehabilitation medicine)***

***Medical specialty **treating**
chronic disabilities through physical
means to help Patients return to a
comfortable, productive life
despite a medical problem.***

Rehabilitation includes
assisting the patient **to**
compensate for deficits
that cannot be reversed
medically

It is prescribed after many types of **injury, illness, or disease**, including

- **Amputations,**
 - **orthopedic injuries**
 - **arthritis**
 - **neurological problems,**
 - **spinal cord injuries,**
 - **stroke, &**
 - **traumatic brain injuries..**
- cardiac disease,** **cancer**



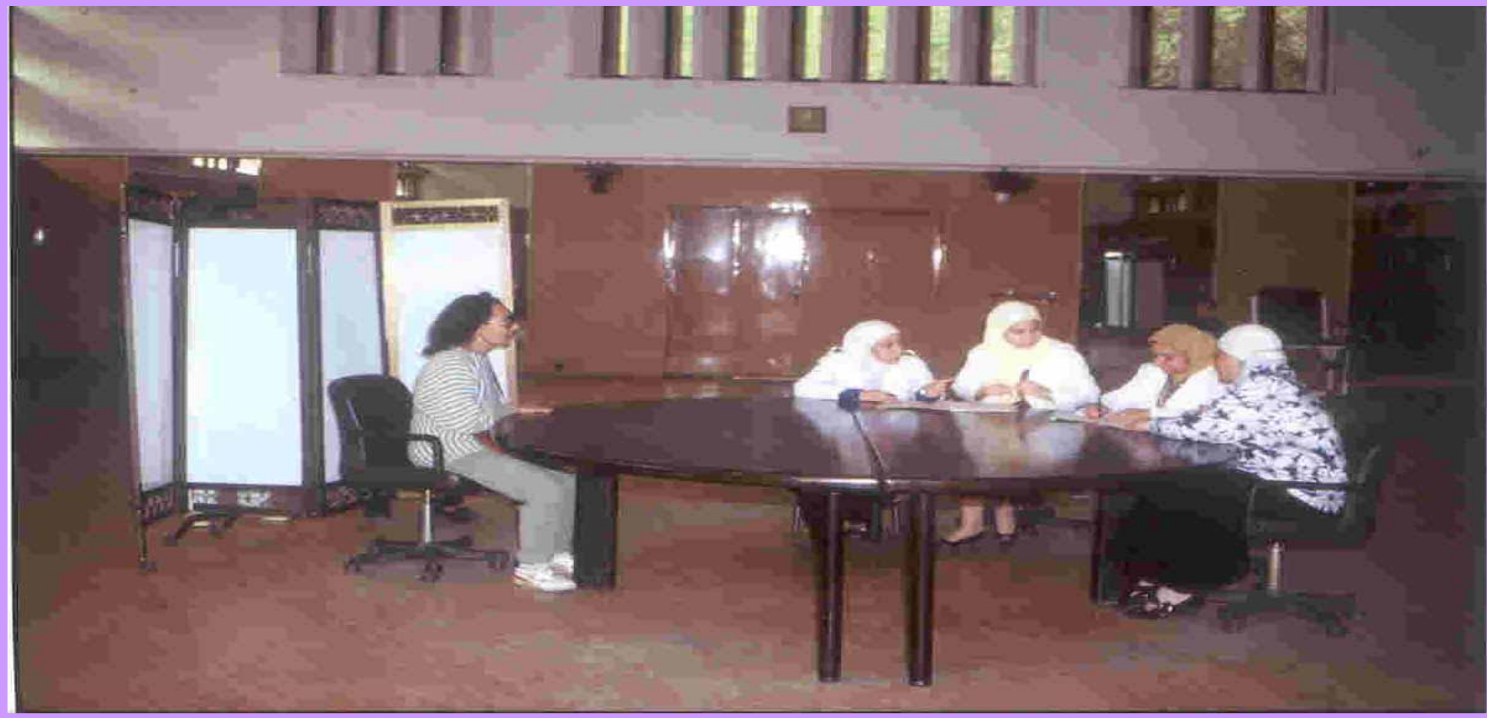
GOALS

Minimize functional deficits

Prevent complications

Use remaining function to maximum

The key to Good Rehabilitation



Team work

• Physician specialists head

Rehabilitation teams including a

• The physical therapist.

• Occupational therapist.

• The social workers.

• Rehabilitation nurse.

• Psychological counselor.

• Speech & respiratory therapist .

• Rehabilitation engineer.

• Orthotist & Prosthetist.

The physical therapist

****The physical therapist assists the patient in functional restoration.***

****Tasks may include the following***

ROM, Muscle Strength, Sitting, Standing, Balance, Coordination, Transfers, and Ambulation, Including wheelchair and Bipedal.

****Progressive Gait training.***

OCCUPATIONAL THERAPISTS

*Are responsible for those
therapeutic activities associated with
patient's daily life, (ADL)
from simple Household and
Personal Activities to
Work and Leisure.*



Occupational therapy

helps the patient regain the ability to do normal everyday tasks.

This may be achieved

by restoring old skills or teaching the patient new skills to adjust to disabilities **through** adaptive equipment, orthotics, and modification of the patient's home environment.

Speech therapy

helps the patient

**correct speech disorders or
restore speech.**

Speech therapy may be prescribed
to rehabilitate a patient after a

brain injury, cancer,

neuromuscular diseases, stroke,

and other injuries/illnesses

Key terms

Orthotist — A health care professional who is skilled in making and fitting orthopedic appliances.

Prosthetist — A health care professional who is skilled in making and fitting artificial parts (prosthetics) for the human body.



social worker

***A social worker help to
Communicate
the patient and family
with the
outside world.***

Evaluation of the patient's
total Living Situation,
Including
Lifestyle,
Family Finances, &
Community resources.

Therapeutic Recreation

Therapeutic Recreation implements various interventions as a form of treatment

• to increase physical, cognitive, emotional and social abilities which may have been altered due to personal trauma or disease.

*• **SPORTS ACTIVITIES***

Vocational Rehabilitation

***The Vocational
rehabilitation program
will assist in training and
placing disabled persons
in **new jobs.*****

What diagnostic tools are used in physiatry

- *medical history, physical examinations,*
- *X-rays.*
- *Electromyography (EMG), nerve conduction studies, and somatosensory and motor – evoked potentials.*
- *Musculoskeletal ultrasound*

is a rapidly developing technique that is also performed by many physiatrists

- **Physiatrists utilize**
- **Medications**
- **Injections.**
- **Physical modalities.**
- **Exercise.**
- **Education individualized to the patient`s needs.**
- **Assistive Devices**

What Are Assistive الأجهزة

Devices المساعدة ?Devices

Assistive devices can
help a person function
better and be more
independent.

Assistive devices can
make daily tasks easier.

Many devices are available to help with activities of daily living (ADLs).

ADLs *are the normal everyday tasks that people do.*

These include:

cooking, eating&house cleaning.

also include personal care tasks like

bathing and using the **bathroom.**



Hand Held Reacher



Grip Drink Holder



Grip Drink Holder



Flexible Sock Aid





**Bathroom
Wheelchair**



Bath Lift



Raised Toilet Seats

**Makes for an Easy On
and Off the Toilet**



Uplift Commode Assist

What Are the Different ? Types of Mobility Aids

*Mobility aids help with
walking or moving from
place to place.*

They can help

*prevent falls and
improve independence.*

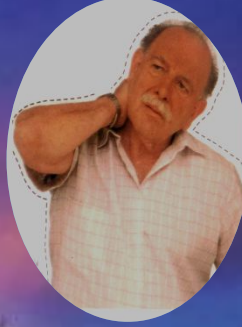


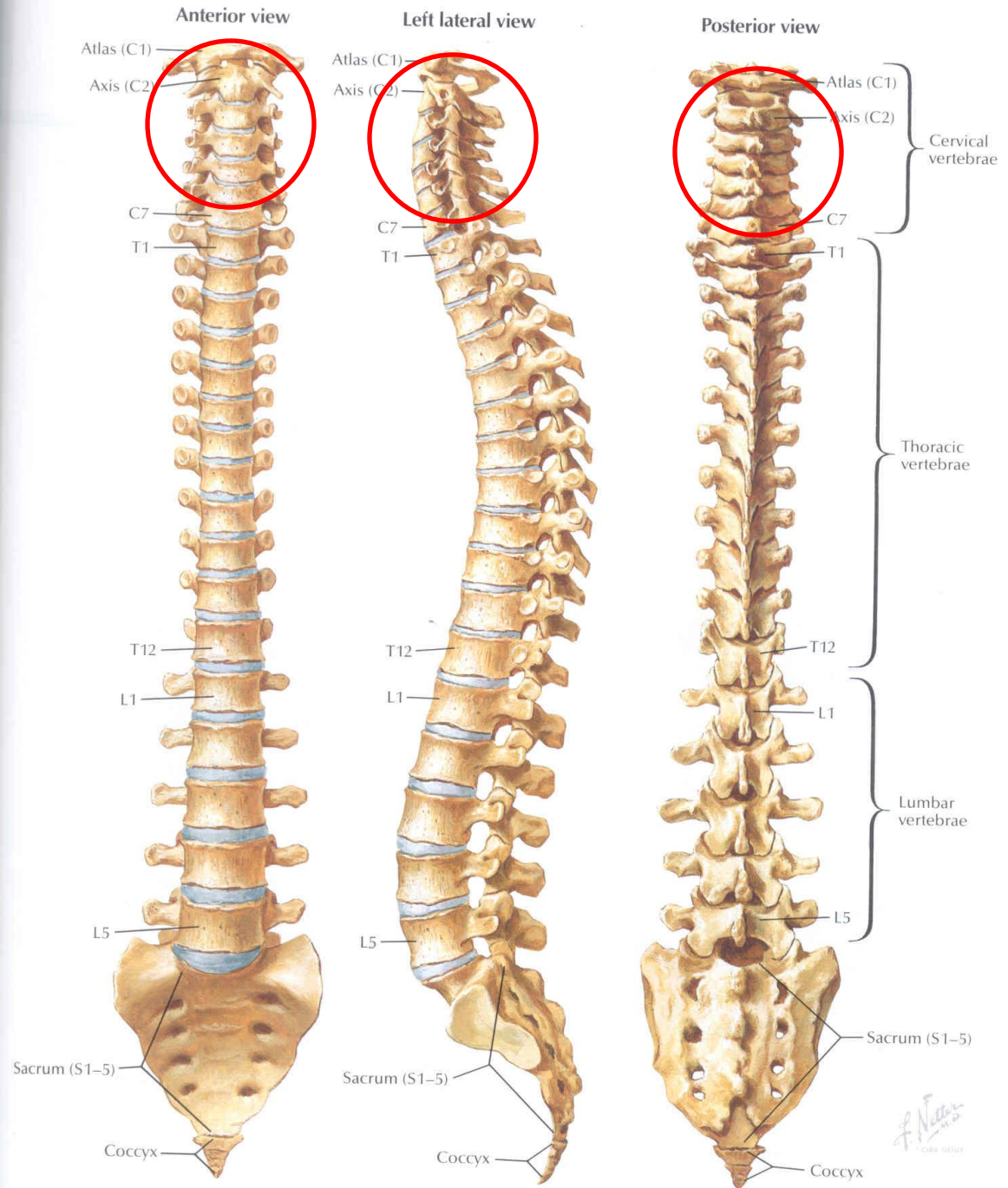
Walkers

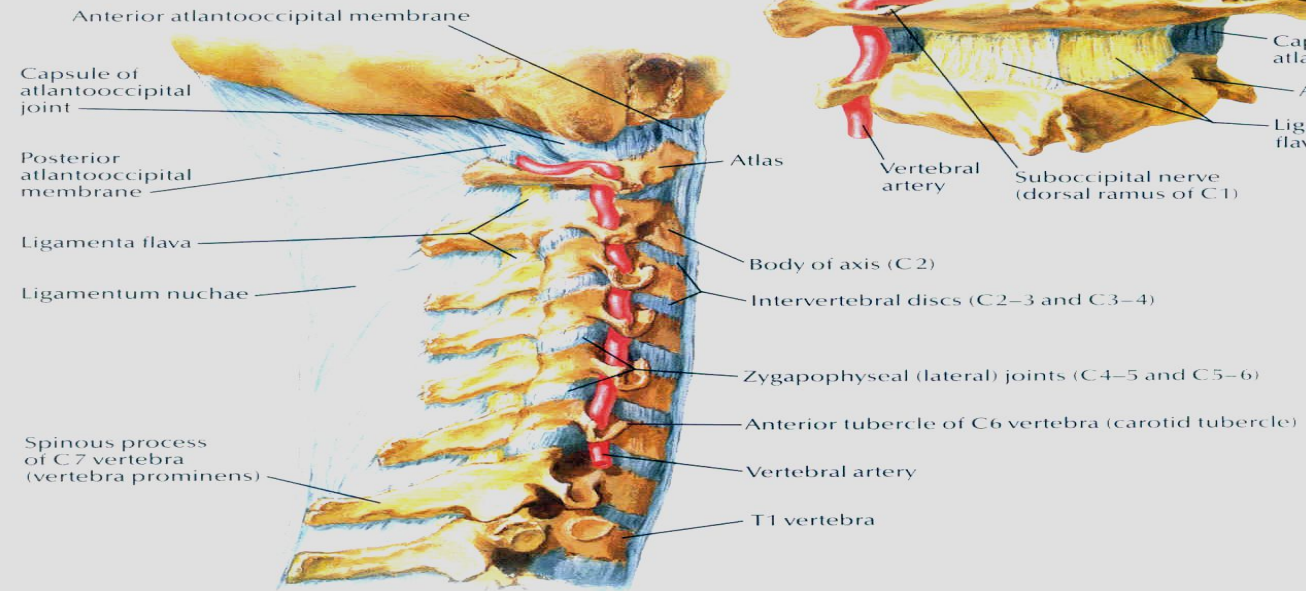
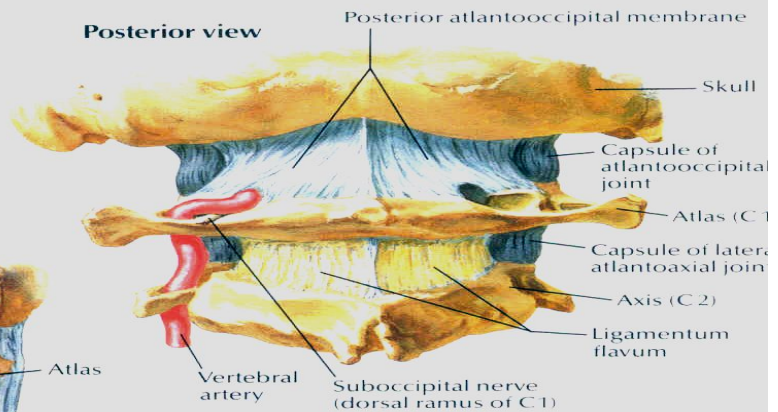
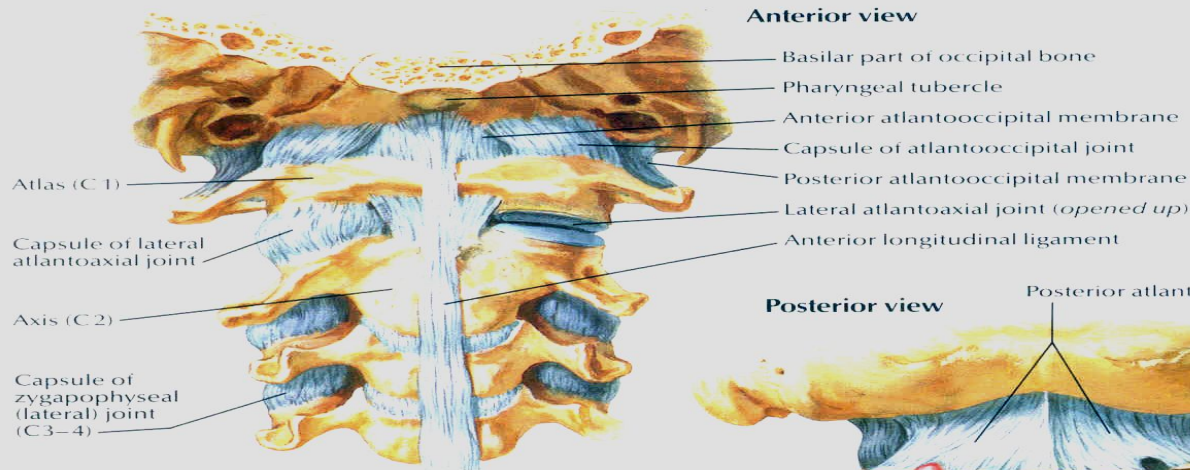
Pediatric

NECK PAIN

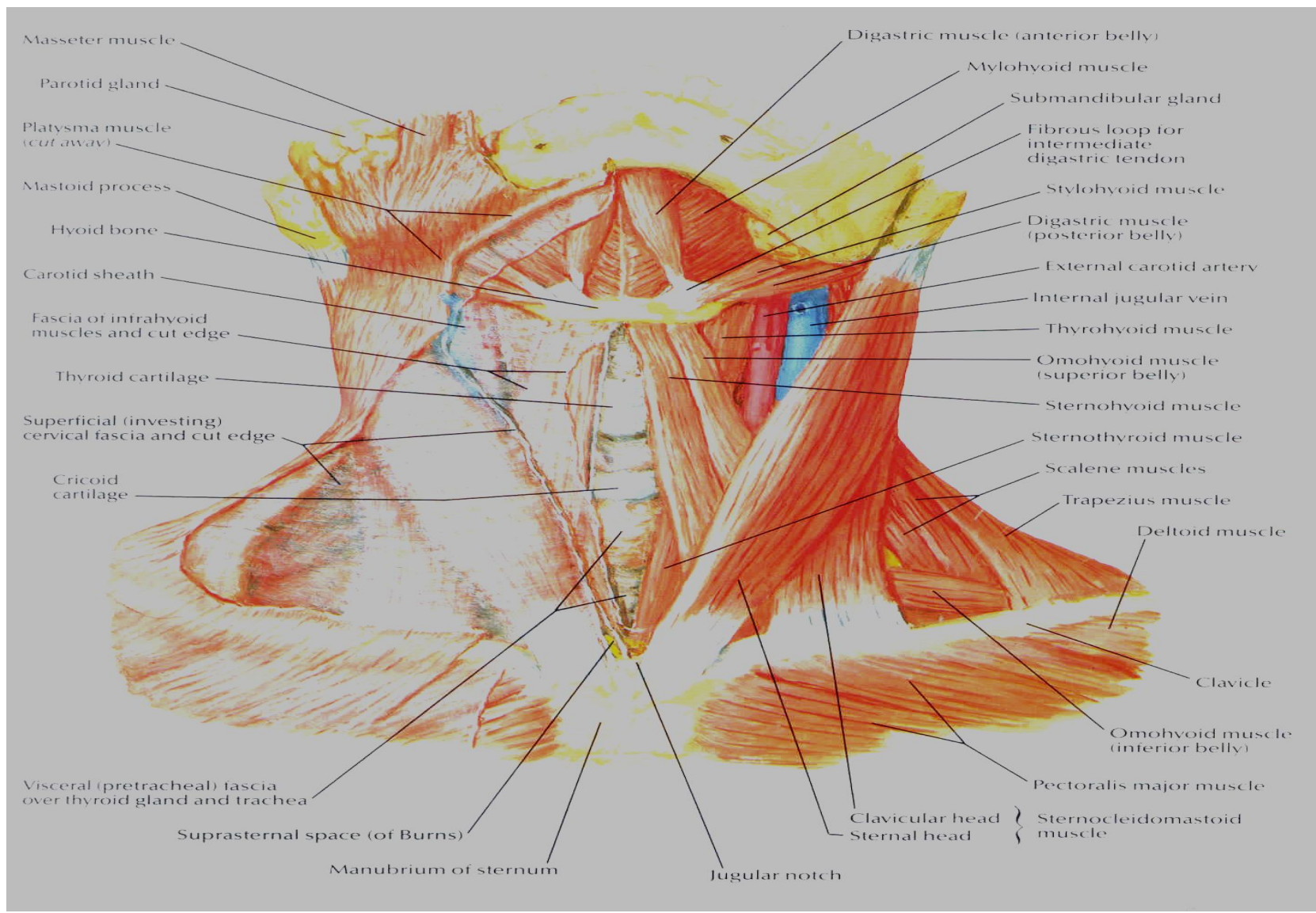
لواء استاذ دكتور
محمد رضا محمد عوض



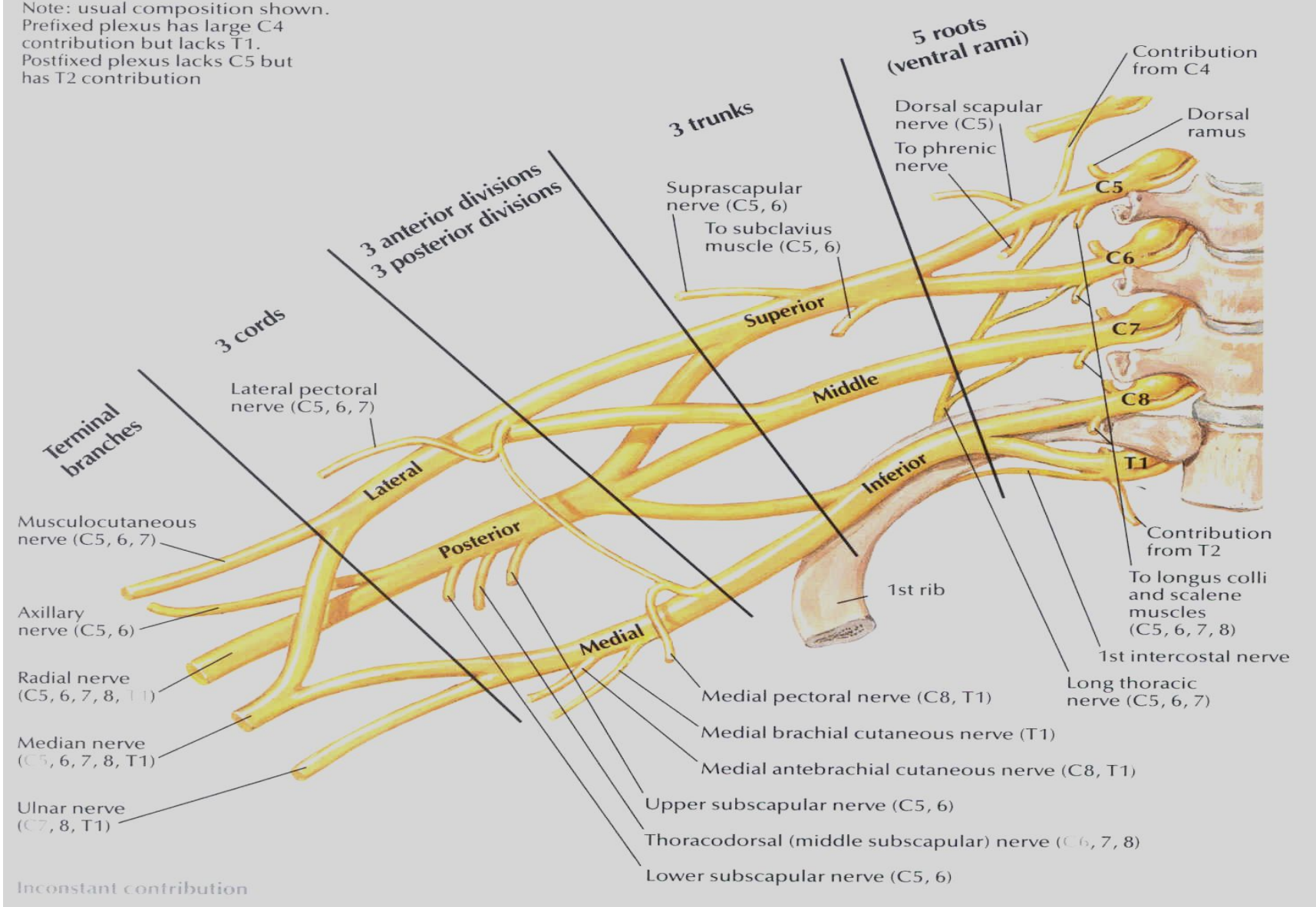




F. Netter



Note: usual composition shown.
 Prefixed plexus has large C4 contribution but lacks T1.
 Postfixed plexus lacks C5 but has T2 contribution



Inconstant contribution

Anatomy

Head weighing 6:8 1b

7 cervical vertebrae

5 intervertebral discs

12 joints of Luschka

14 apophyseal joints.

System of ligaments

(ant. long, post. long, lig. flavum, interspinous and ligamentum nuchae)

Muscles

(14 paired anterior lateral & post)

Prevalence

Neck Stiffness

• 25 : 30 % Age 25-29 year

Up to 50 % Age over 45 year

Neck Stiffness with Brachialgia

• 5 : 10 % Age 25 – 29 year

25:40 % Age over 50

Musculoskeletal Causes

Osteoarthritis

Diffuse idiopathic skeletal hyperstosis

Cervical spondylosis

Disk disease

Rheumatoid arthritis

Fracture

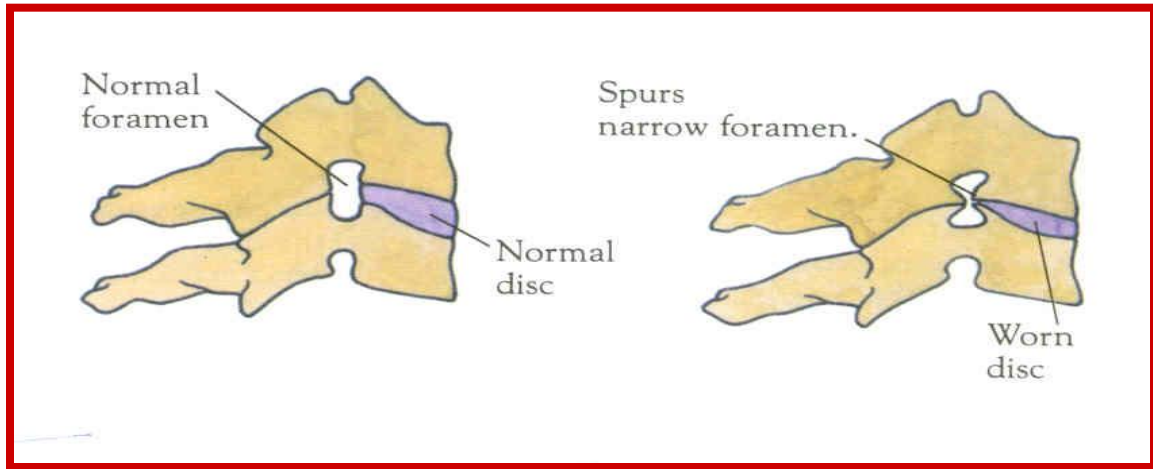
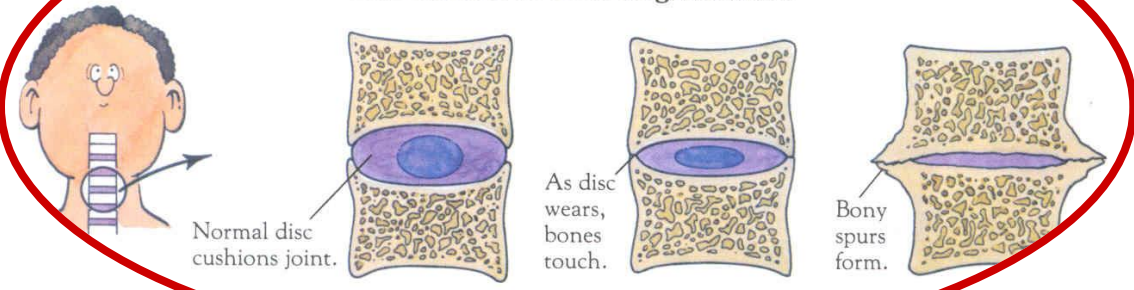
Neoplasm

Thoracic outlet syndrome (cervical rib, first rib, and clavicular compression syndromes)

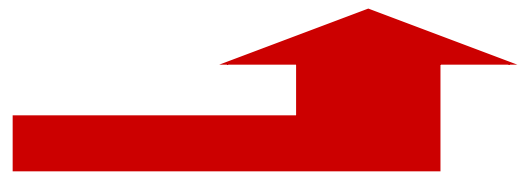
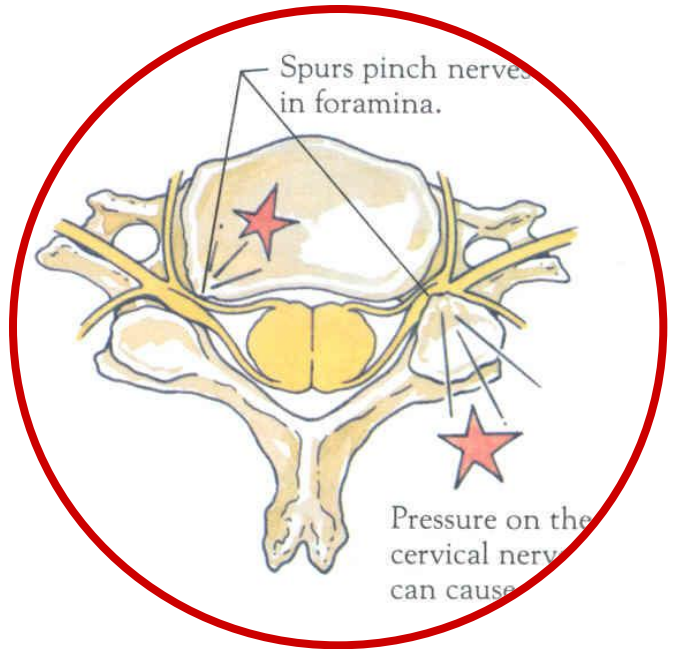
Osteomyelitis

tear

The Process of Disc Degeneration



Osteoarthritis



Neurological Causes

Nerve root syndromes

Cervical myelopathy

Neuritis (brachial, occipital)

Torticollis

Meningitis

Cord tumors

Soft tissue and muscular pain

Acute cervical strain

Cumulative trauma, overstrain syndromes

Tendinitis, bursitis

Postural disorders

**Fibrositis, fibromyalgia, and myofascial
syndrome**

Pharyngeal infection

whiplash injury or neck sprain injury

The term “whiplash,” used to describe an injury mechanism of

sudden hyperextension

(backward motion) followed

by hyperflexion (forward

motion) of the neck.

The injury mechanism is **commonly seen in sports and auto accidents**

The most common **whiplash symptoms** are neck pain, neck stiffness, headache, shoulder pain, back pain, and difficulties with concentration and memory. Dizziness, buzzing in the ears, insomnia, depression, and anxiety also are reported

Referred Pain

Heart and coronary artery disease

Apex of lung: Pancoast's tumor

Migraine

Muscle tension and myofascial pain

TMJ syndrome

**Diaphragm, gallbladder, pancreas, hiatus
hernia**

Clinical Evaluation

History

Physical Examination

Radiologic Evaluation

Electro - Diagnosis

**(assist in confirming the clinical
formulation)**

Examination of Related Area

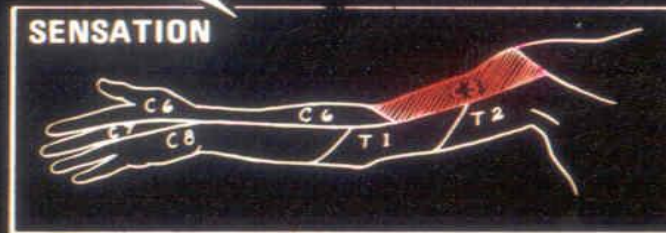
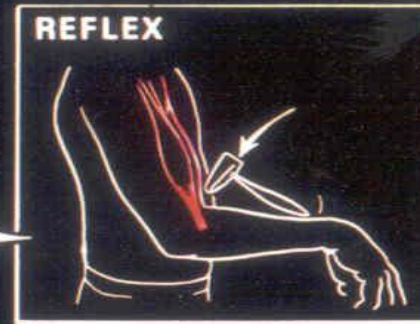
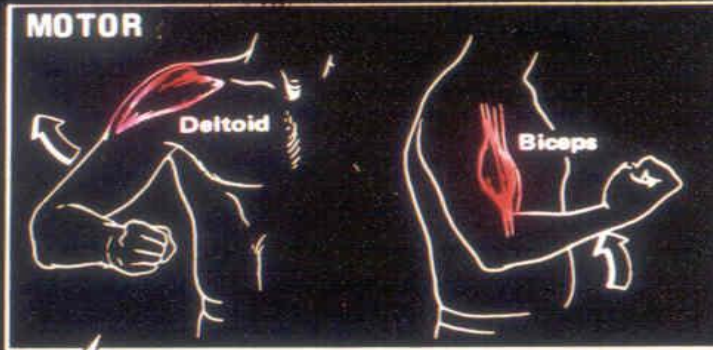
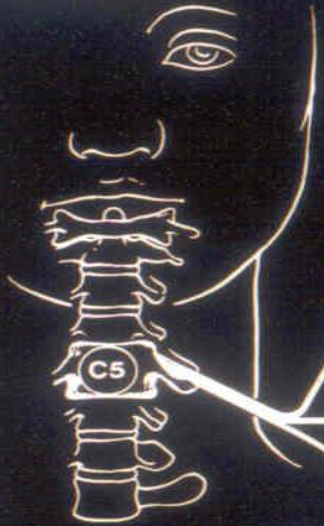
Shoulder

**(Rotator Cuff Tendinitis –
capsulitis)**

TMJ

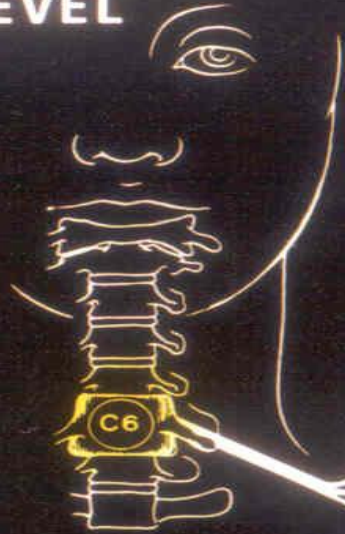
Upper Limb

C5 NEUROLOGIC LEVEL



The C5 neurologic level.

C6 NEUROLOGIC LEVEL



MOTOR

Wrist Extensors:
Ext. Carpi Rad. Longus and Brevis

Biceps

REFLEX

SENSATION

The C6 neurologic level.

C7 NEUROLOGIC LEVEL



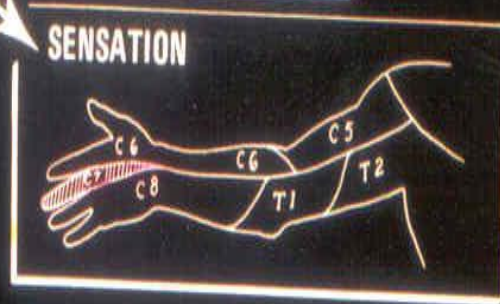
MOTOR



REFLEX



SENSATION



The C7 neurologic level.

C8 NEUROLOGIC LEVEL



MOTOR

Interossei Muscles

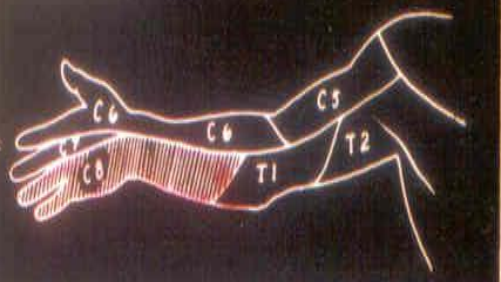
Finger Flexors



REFLEX



SENSATION



The C8 neurologic level.

Cervical Nerve Roots and Their Corresponding Sensory and Motor Disturbances

	NERVE ROOT AFFECTED	PHYSICAL FINDINGS
C4-5	C5	<ul style="list-style-type: none">• Deltoid muscle weakness• Does not usually cause numbness or tingling• Can cause shoulder pain
C5-6	C6	<ul style="list-style-type: none">• Biceps weakness• Numbness and tingling along with pain can radiate to thumb side of hand• Most common level for a cervical disc herniation to occur
C6-7	C7	<ul style="list-style-type: none">• Triceps and finger extensor weakness• Numbness and tingling along with pain can radiate down triceps and into middle finger• Second most common level for a cervical disc herniation to occur
C7-T1	C8	<ul style="list-style-type: none">• Can cause weakness with handgrip• Numbness and tingling and pain can radiate down arm to small finger

Management

AIM

Relief of pain and stiffness
in the neck and arms

Restore the function of
neck and related
structures .

Avoid pain recurrence

PATIENT EDUCATION

various types of initial neck pain treatment with

- * analgesics, sedatives, antihistamines, nonsteroid anti-inflammatory drugs,
- * antidepressive drugs, , muscle relaxants, and
- * local anesthetic injections as well as

PHYSICAL THERAPY

, neck collar immobilization,.

HEAT,ice

MASSAGE

ACUPUNCTURE

MANIPULATION

At Your Workstation

Lying

X



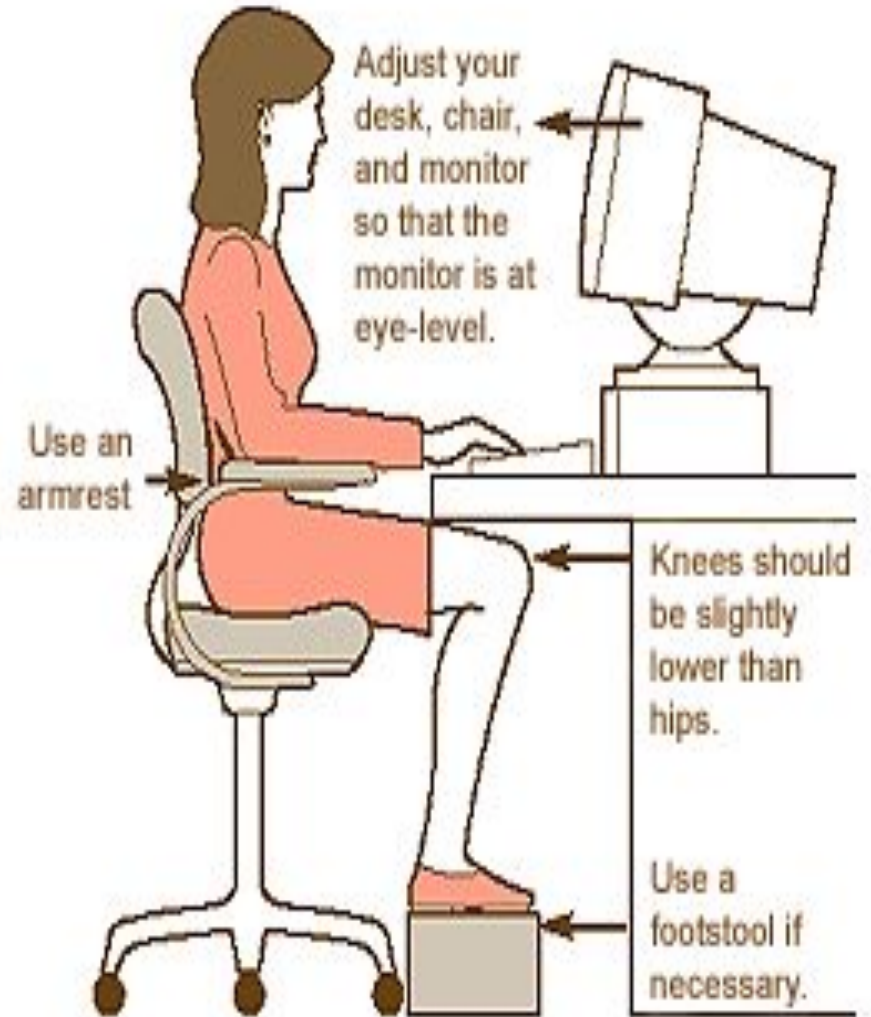
✓



X



✓





LUMBAR DISC PROLAPSE



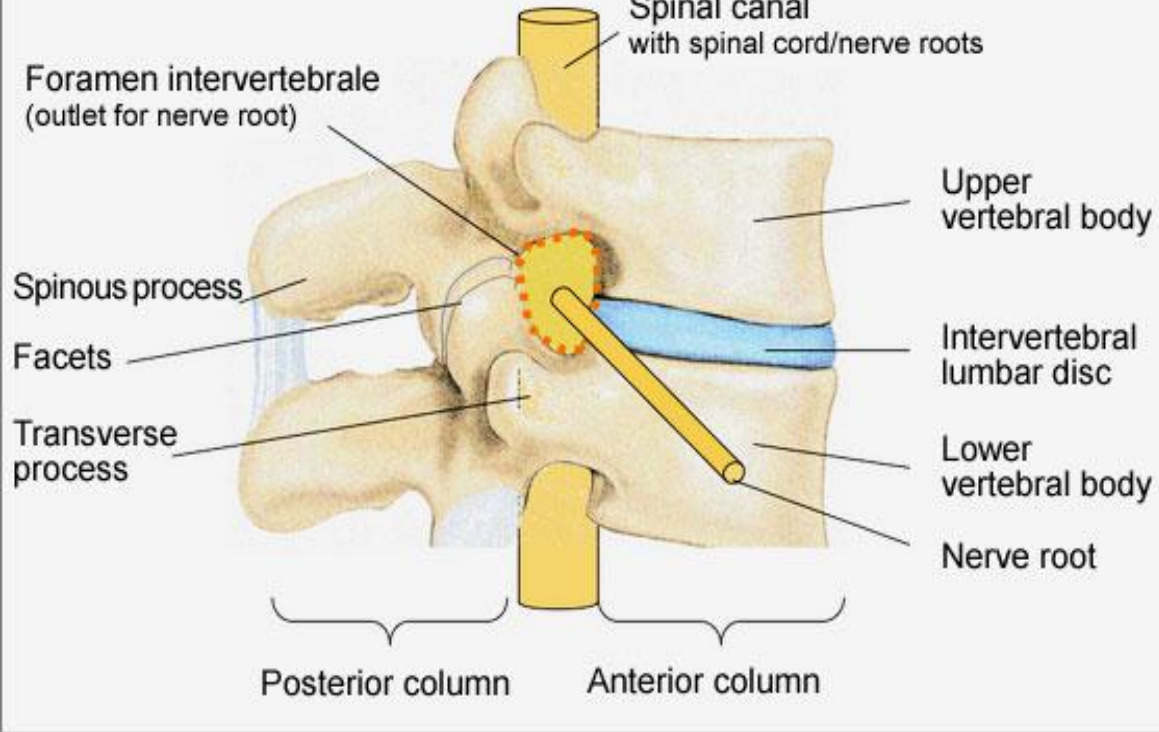
REDA

LBP: Statistics

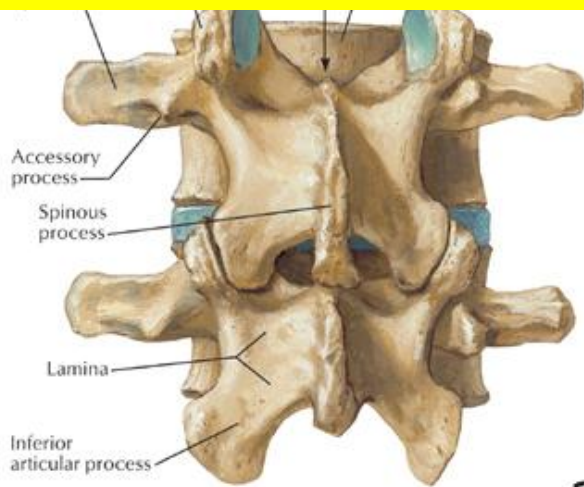
- **Second** only to the common cold in frequency among adult ailments
 - **Fifth** most common reason for an office visit
- 80% of all people** experience low back pain at some time during Their lives
- Lifetime **recurrence rate 85%**

على المستوى المحلى

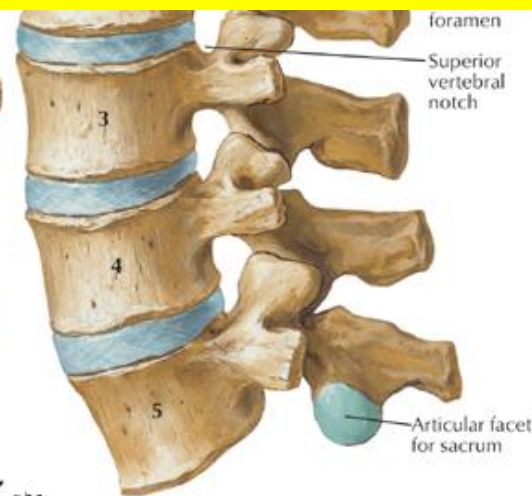
- 
- 44 % من عمال الحديد والصلب
 - 34 % من سائقى أتوبيس النقل العام .
 - 32 % من سائقى القطارات .
 - 30 % من العاملين بالتمريض .
 - 28 % من أطباء الأسنان .



lumbar spine normal motion segment

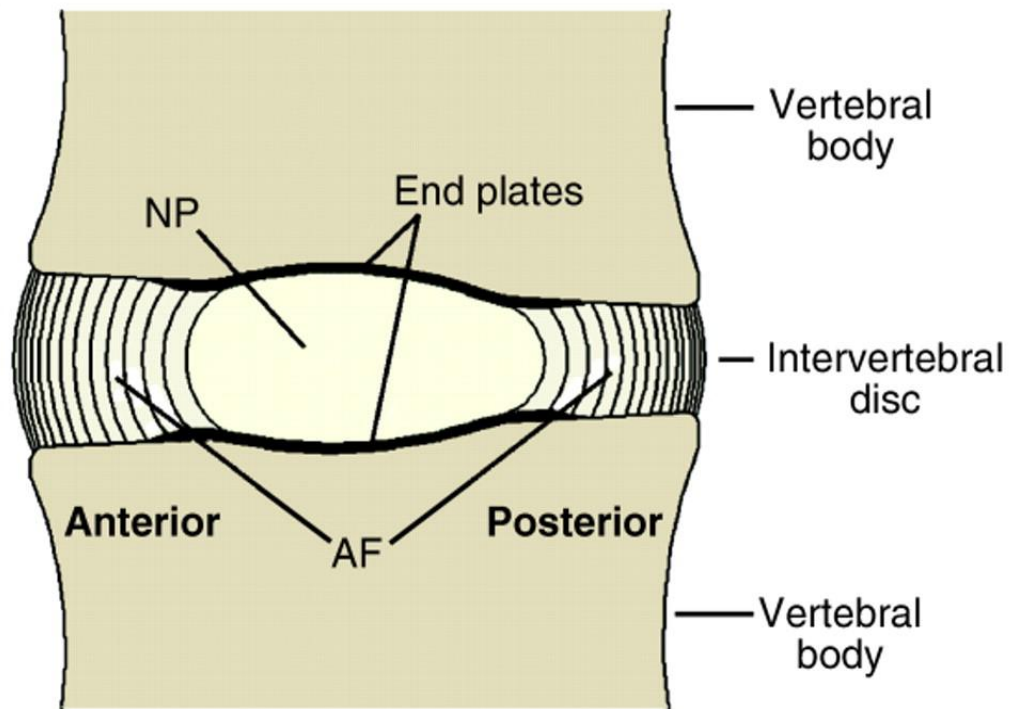
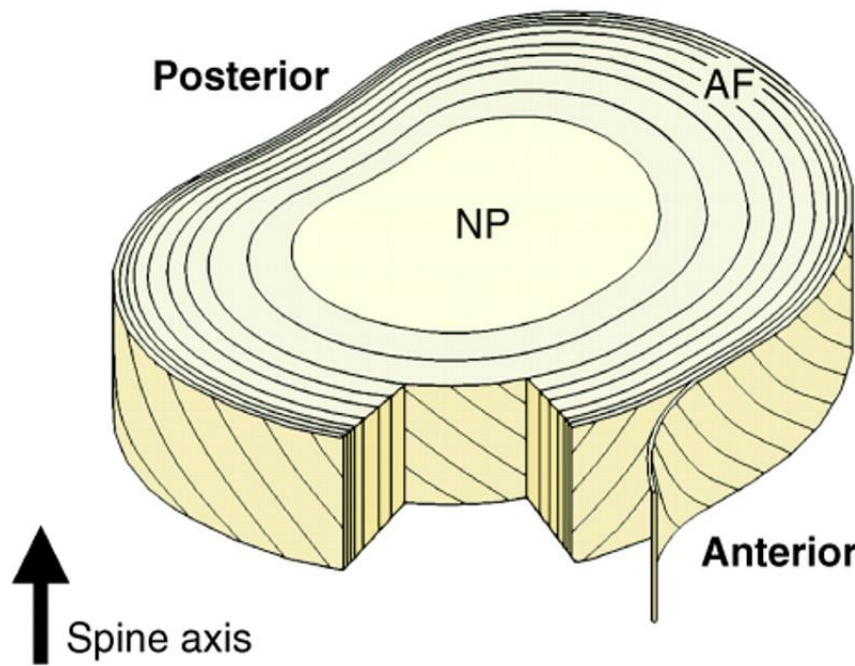


L3 and L4 vertebrae:
posterior view



Lumbar vertebrae, assembled:
left lateral view

F. Netter M.D.
© IGV 2012

A**B**

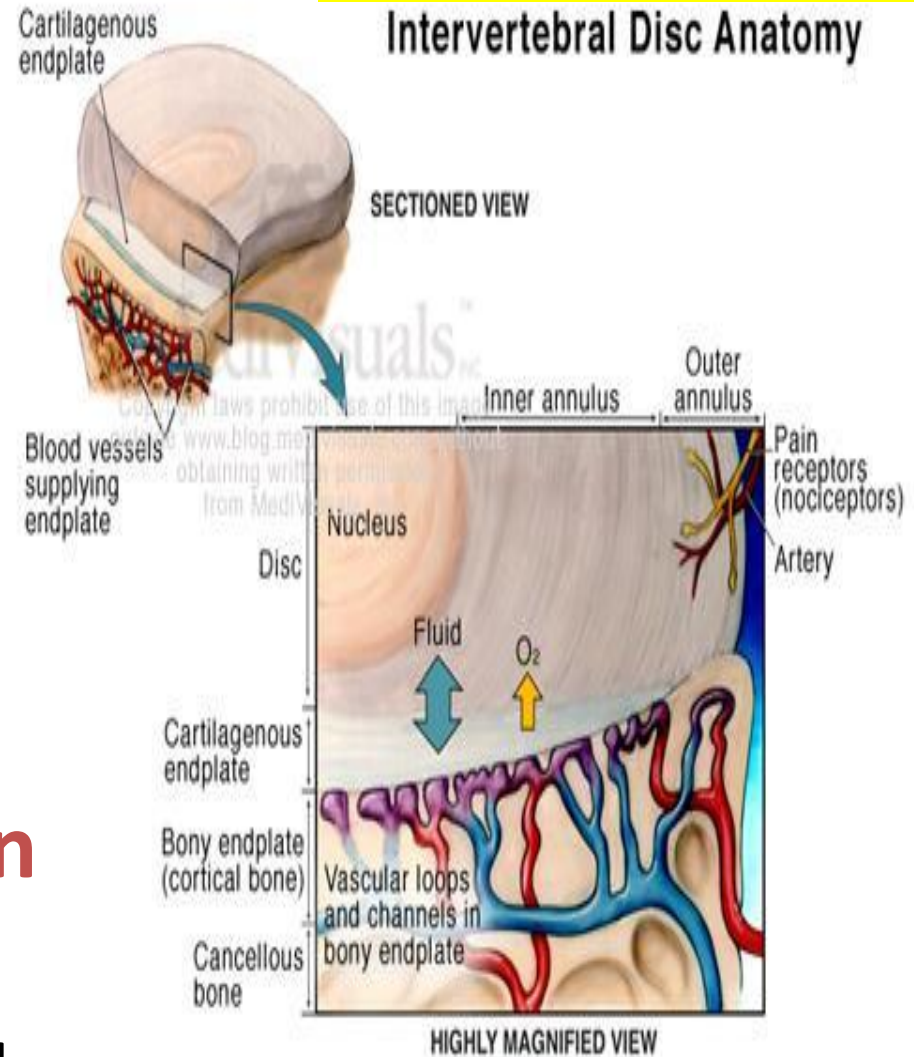
The disc is made up of three basic structures:

**the nucleus pulposus,
the annulus fibrosus and
the vertebral end-plates,**

Nutrition

The disc is the **largest avascular structure** in the human body.

Nutrients for the disc are found within tiny **capillary beds that are in the subchondral bone**, just above the vertebral end-plates



Disc innervation

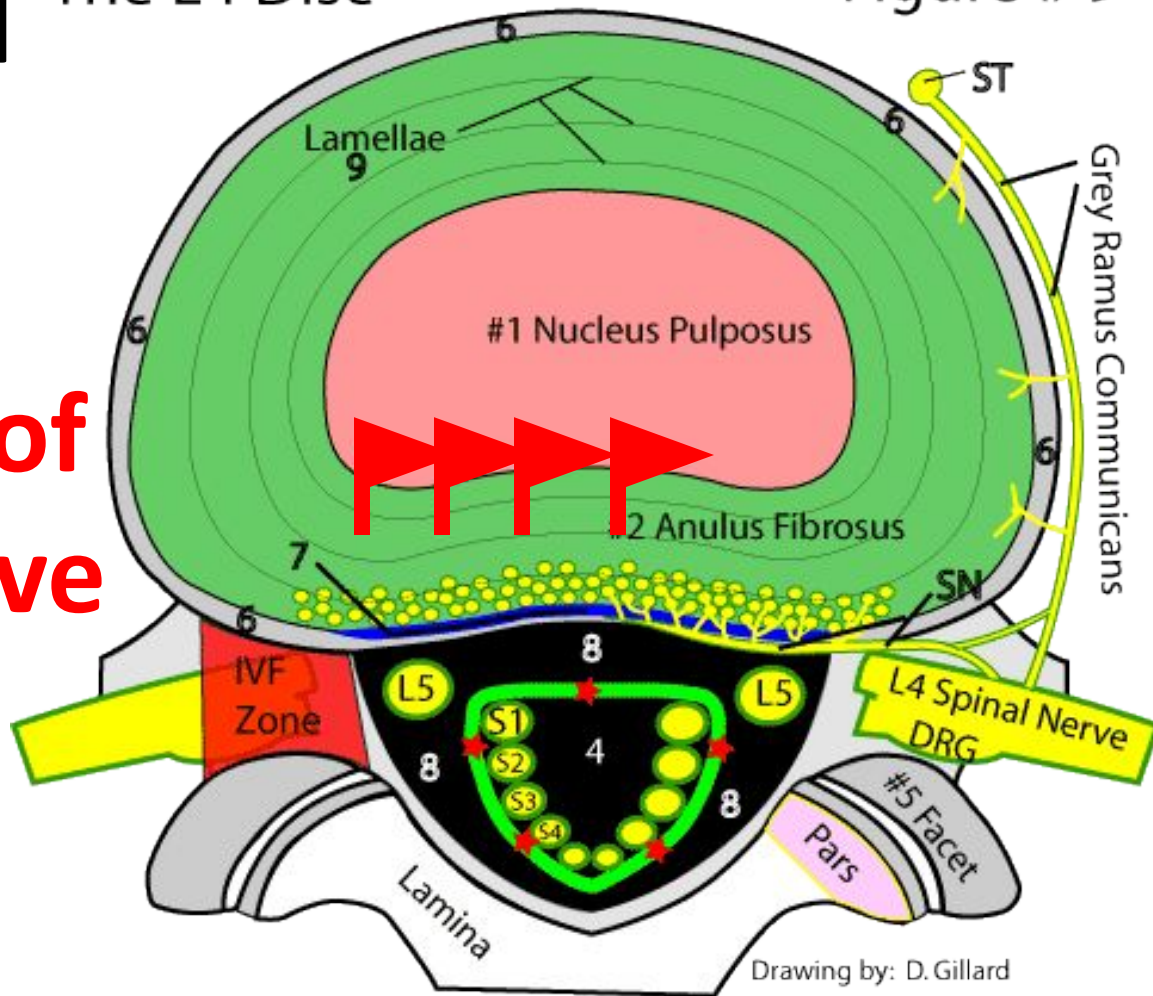
1981 Australian clinical
anatomist and
physician

Nikoli Bogduk

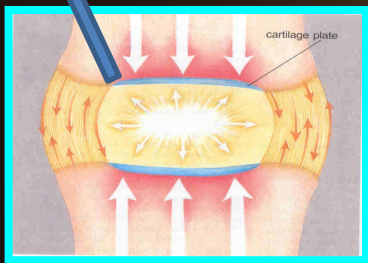
The outer 1/3 of
annulus receive
innervation
with small
Afferents.

The L4 Disc

Figure # 9



interdiscal pressure



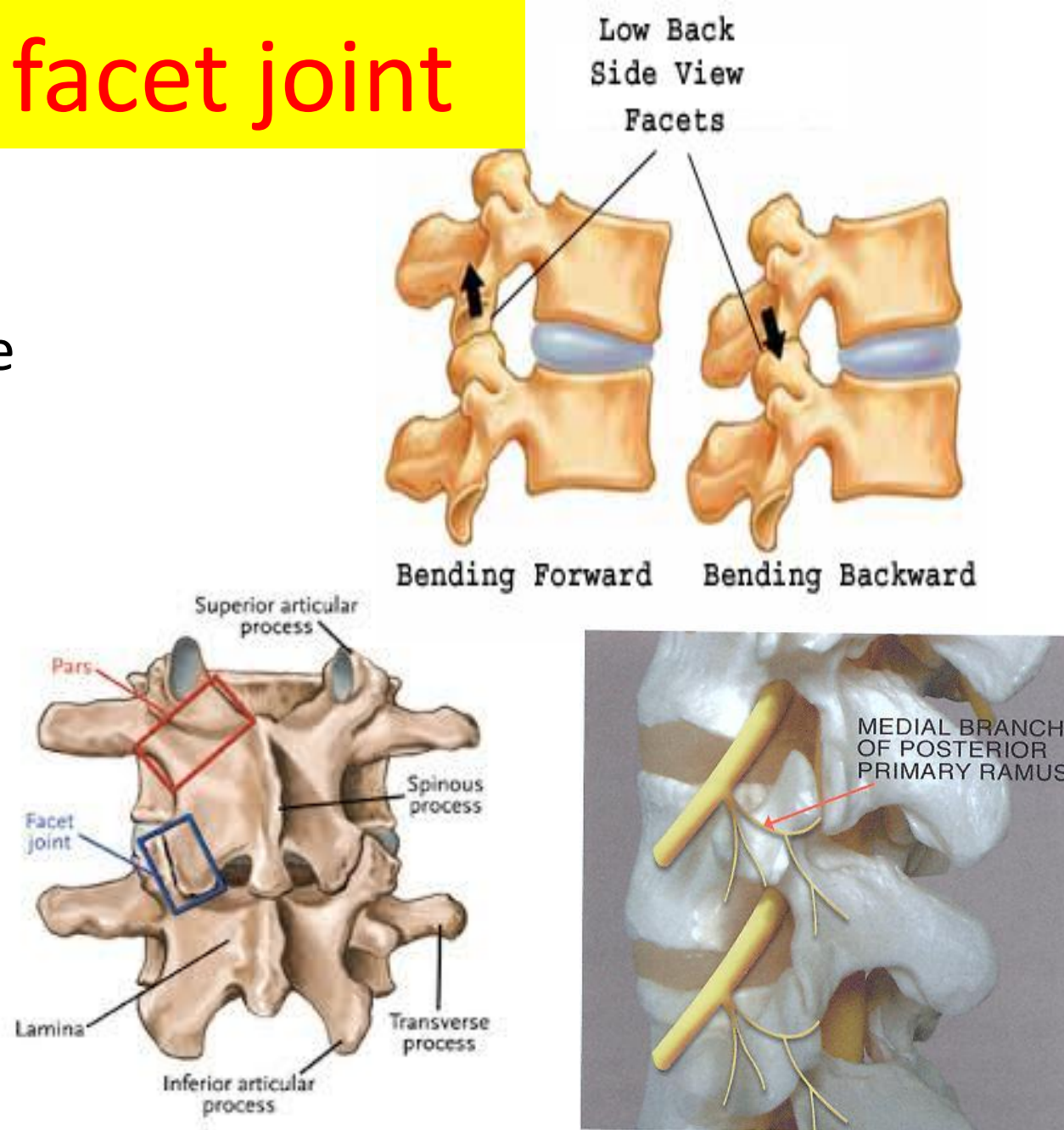
Body Positions Affecting the Spine Disc Pressure



is a synovial joint between the superior articular process, of one vertebra and the inferior articular process of the vertebra directly above it.

These joints are in constant motion, providing the spine with both the stability and flexibility

facet joint



Degeneration

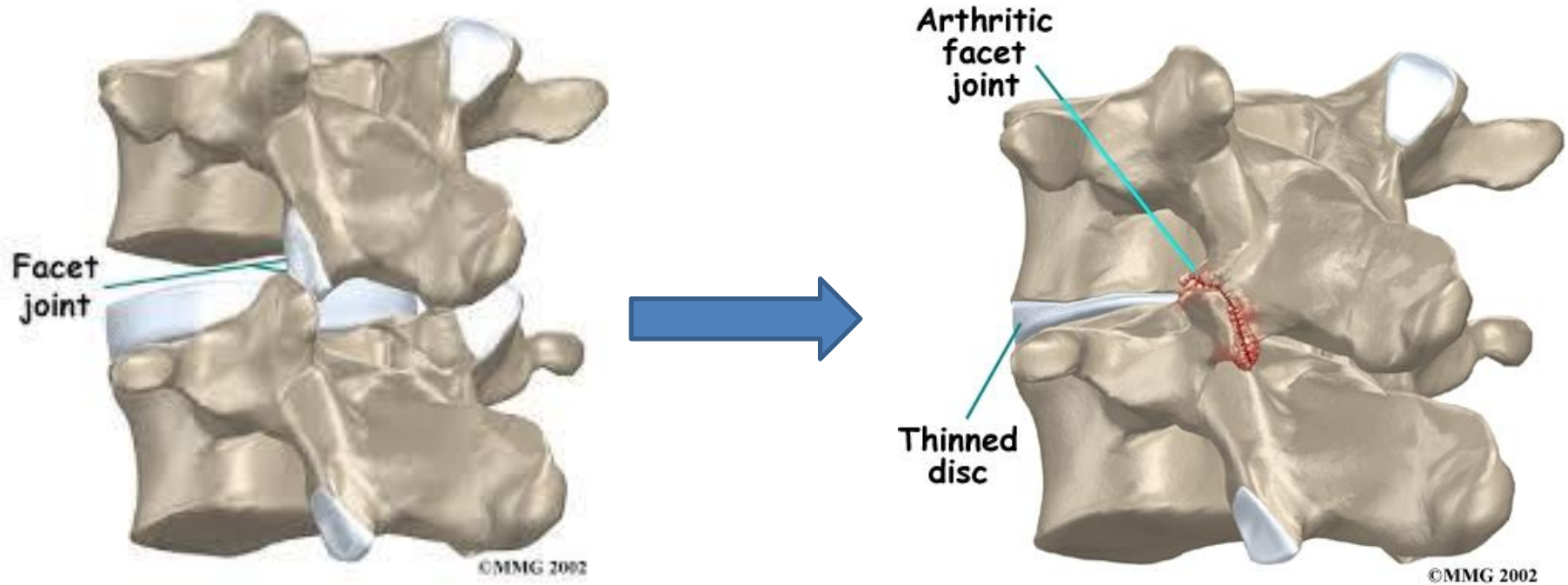


Before age 40 approximately **25%**. Beyond age 40, more than **60%** of people show evidence of disc degeneration at one or more levels on a MRI.

the nucleus pulposus begins to dehydrate and the concentration of proteoglycans in the matrix decreases, thus limiting the ability of the disc to absorb shock.

The anulus fibrosus also becomes weaker with age and has an increased risk of tearing.

In addition, **the cartilage end plates** begin thinning, fissures begin to form, and there is sclerosis of the subchondral bone



As the disc dehydrates
the disc loses ability to support the
axial load of the body; this causes a
'weight bearing shift' from the nucleus,
outward, onto **facet joints** .

Recommendation

Clinicians should conduct a focused

HISTORY &

PHYSICAL EXAMINATION

to help place patients with low BP

into 1 of 3 broad categories:

Diagnostic triage

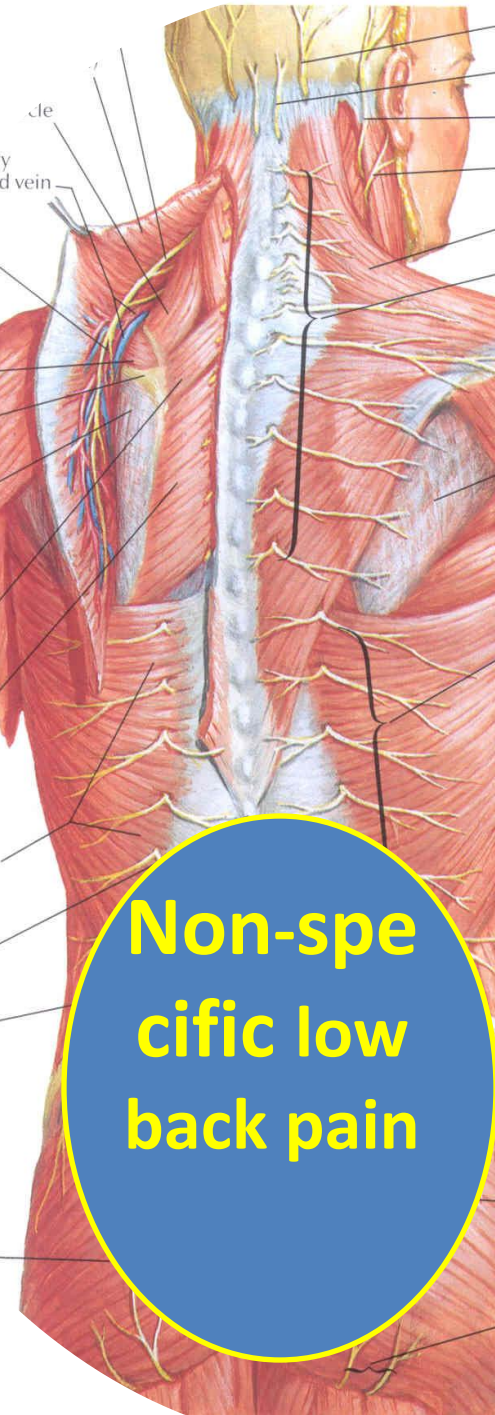
Nonspecific low back pain. **85%**

back pain potentially associated with

Radiculopathy or
spinal stenosis **7%**

or back pain potentially
associated with another

Specific spinal causes **8%**



Pain, muscle tension, or stiffness that occurs between the (rib cage and the inferior gluteal folds), with or without (sciatica)& has no identifiable cause

Degenerative changes on lumbar imaging are usually considered nonspecific, as they correlate poorly with symptoms

specific disorder, (8%)

such as

cancer

compression fracture

spinal infection

Ankylosing sp

symptomatic

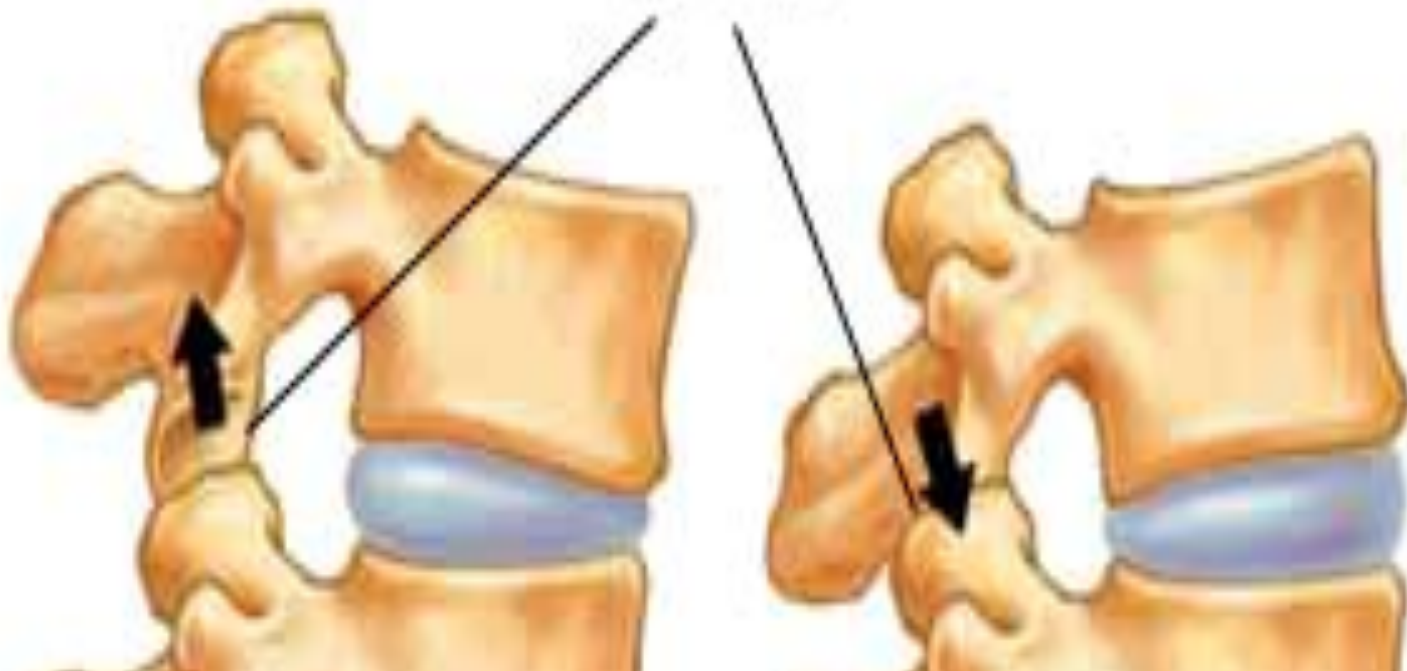
herniated disc 4%

Spinal stenosis 3%

cauda equina synd. 0.04%

**is most commonly associated
with massive midline
disc herniation
but is rare**

Symptoms of Facet Joint Problems



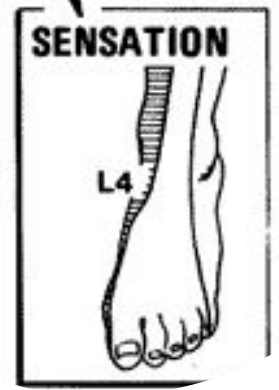
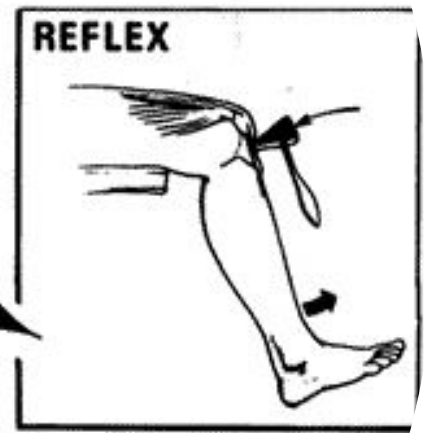
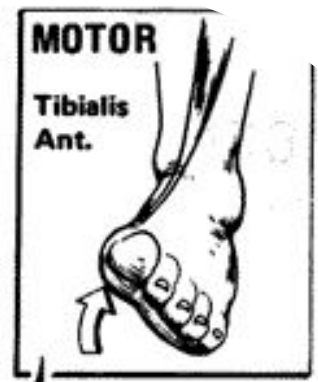
- The pain is **rarely present** in the front of the leg, or **rarely radiates** below the knee
 - *more **discomfort** while leaning backward

Clinical Evaluation

- *History*
- *Physical Examination*
- *Radiologic Evaluation*
- *Electro - Diagnosis*

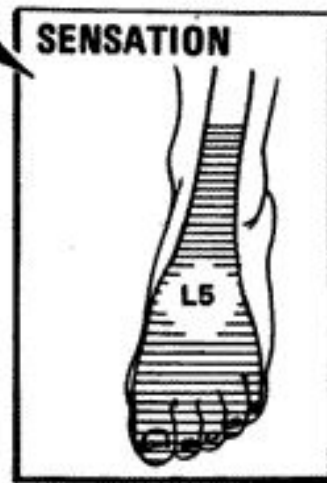
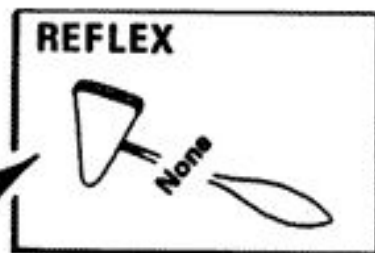
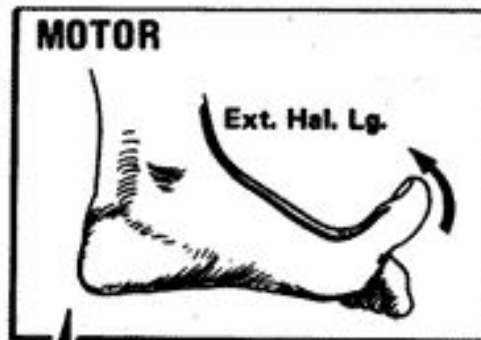
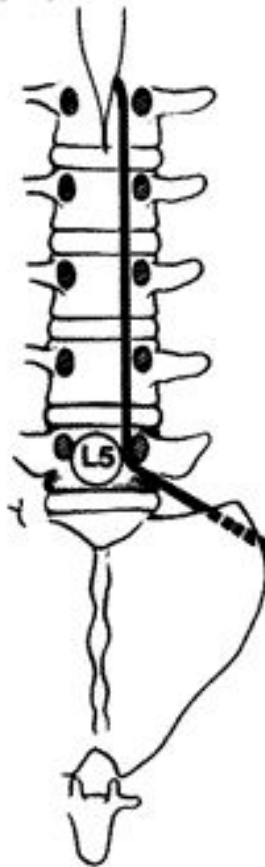
(assist in confirming the clinical formulation)

PHYSIOLOGIC LEVEL

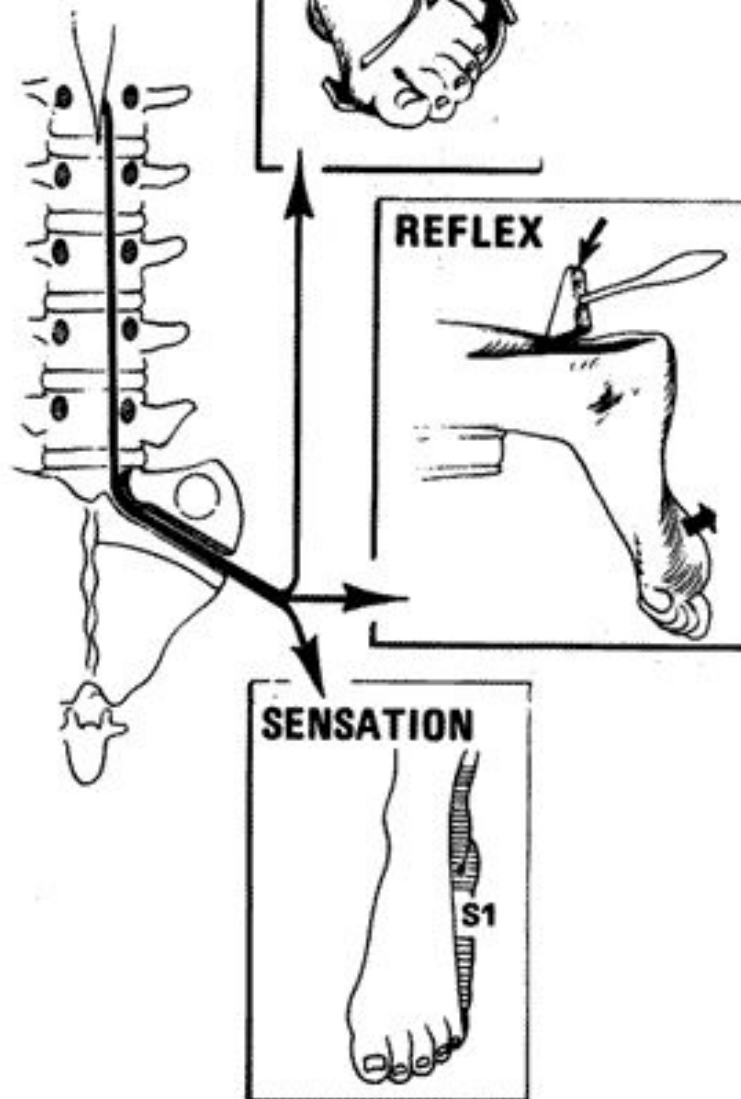


L5

NEUROLOGIC LEVEL



S1 NEUROLOGIC LEVEL




The Diagnosis of back pain should be
Based on a Good History and
a Competent Physical examination



Clinical examination is the
most important
Diagnostic procedure that will
be undertaken

Imaging studies should be ordered in patient with :

- progressive **neurologic** deficits
 - **failure** to improve
 - history of **truma**
 - those at elevated risk for **malignancy or infection**
- 

Goals

An anatomical illustration of a human skeleton, viewed from the front. The lumbar spine (lower back) is highlighted with a semi-transparent red oval, indicating the primary focus of the goals listed. The rest of the skeleton, including the ribcage, pelvis, and limbs, is shown in a light gray outline.

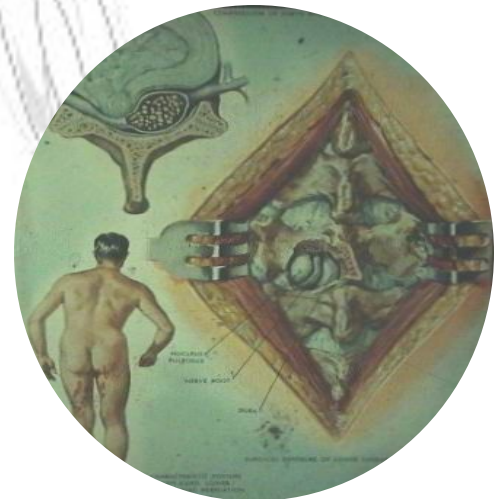
**Relieve of pain*

**Restoration
of physiological movements*

**Prevention of relapses*

Surgery should be considered for

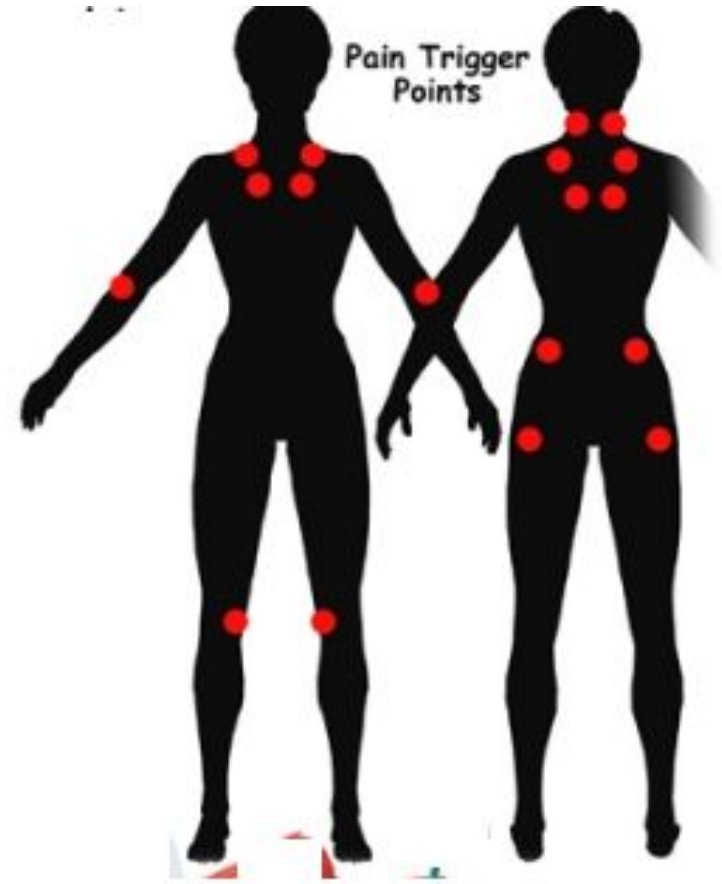
- * *Cauda equina syndrome .*
- * *Individuals With Motor Weakness*
- * *Persistent Radicular pain*
- * *Failure of Conservative therapy*
at **3** or more months .



Fibromyalgia Syndrome



نواع ا.د
محمد
رضا
عوض



- Typically presents with symptoms of diffuse body pain frequently involving the spinal region**
- Neurologic Clinics - Volume 25, Issue 2 (May 2007)**

Fibromyalgia is associated with :

- **Fatigue**
- **Sleep disorder**
- **Anxiety , Depression**
- **Cognitive disturbance(memory and thinking skills)**
- **Tension/migraine headaches**
- **Exercise intolerance**
- **Irritable Bowel syndrome**

ACR 1990 Criteria for Fibromyalgia

- **Widespread pain with a minimum duration of 3 months**

Both right and left sides

Both above and below the waist

Axial skeletal pain

- Wolfe F, et al. *Arthritis Rheum* 1990, 33:60-72.

Enhanced central processing of painful stimuli is manifested by:

- **Hyperalgesia** (increased response to painful stimuli) and
- **Allodynia** (sensitivity to normally non-painful stimuli)
 - A pathognomonic finding in fibromyalgia.

Eleven or more
tender points
at 18 specific
anatomical sites



1. Insertion of nuchal muscles into occiput
2. Upper border of trapezius-mid-portion
3. Muscle attachments to upper medial border of scapula
4. Anterior aspects of the C5, C7 intertransverse spaces
5. 2nd rib space - about 3 cm lateral to the sternal border
6. Muscle attachments to lateral epicondyle
7. Upper outer quadrant of gluteal muscles
8. Muscle attachments just posterior to greater trochanter
9. Medial fat pad of knee proximal to joint line

A total of eleven or more tender points in conjunction with a history of widespread pain is characteristic of the fibromyalgia syndrome.

The Etiology of fibromyalgia remains unclear, Current hypotheses:

- Aberrant CNS processing of pain
- Dysfunction of the hypothalamic-pituitary-adrenal axis

Triggers of Fibromyalgia

- Physical trauma (car accidents)
- Infections such as hepatitis C, Epstein-Barr virus, parvovirus, or Lyme disease
- Emotional stress
- The "Gulf War illnesses"

Aggravating factors were:

- Emotional distress
- Weather changes
- Exertion

Healthy individuals with normal sleep and exercise patterns when deprived from Sleep and exercise Suffered from

- Increased Pain
- Fatigue
- Mood disturbance
- Cognitive disturbance
- Sleep deprivation causing greater impact

Why should we know it better?

- *It is the second most common diagnosis made in rheumatology clinics*
and the most common cause of generalized, musculoskeletal pain in middle aged women

Why should we know it better?

- It is associated with substantial morbidity and disability
- It may masquerade the initial stages of SLE or RA

Why should we know it better?

- Co-existing fibromyalgia may be confused with a flare of SLE and RA
- Patients with FM were found to have significantly higher (HAQ) scores than RA patients.

It has to be differentiated from other serious causes of myalgia

- Polymyalgia rheumatica
- Statins therapy
- Hypothyroidism
- Polymyositis.

Optimal treatment of FMS mandates
a multidisciplinary approach,
including

- Pharmacologic and
- Non- Pharmacologic interventions

Treatments should be specifically tailored to Patient reports of :

- **Pain intensity**
- **Function**
- **Associated features such as**
 - ◆ **Depression**
 - ◆ **Fatigue**
 - ◆ **Sleep disturbance.**

Pharmacologic treatment: Strong evidence for

- **Antidepressants:**
 - **Dual re-uptake inhibitors**
 - TCA (amitryptiline, cyclobenzaprine)
 - SNRIs (milnacipram, duloxetine)
- **Anticonvulsants**
 - **Gabapentin**
 - **Pregabalin**

Non-Pharmacological therapies

- Strong evidence
 - Education
 - Aerobic exercises
 - Cognitive behavioral therapies

Educational Points

- The patient must be **reassured** that fibromyalgia is a real illness, and not imagined .
- The **benign nature** of the disorder should also be emphasized.
- It is **not a deforming** condition, and that it is neither life-threatening nor a cosmetic problem.

Aerobic Exercises

- General guidelines:
 - Begin 2–3 months after start of drug therapy
 - Begin with low impact exercises

Take away message

- Patient Education
- Aerobic exercises
- Heated pool treatment
- Cognitive behavioral therapies
- Complement drug therapy.

