Advanced Physical Therapy Practice

100 BASIC KEY POINTS FOR PHYSICAL THERAPISTS

2021 Edition

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Advanced Physical Therapy Practice

General
Basic Key Points

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Basic Key Point 1

Physical Therapists main goal not only to relief pain but also to restore function

We are people dealing with function

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Basic Key Point 2

Physical therapy long term goal

To make the patient functional and independent By restoring optimal

Mobility

Stability

Controlled mobility

Posture

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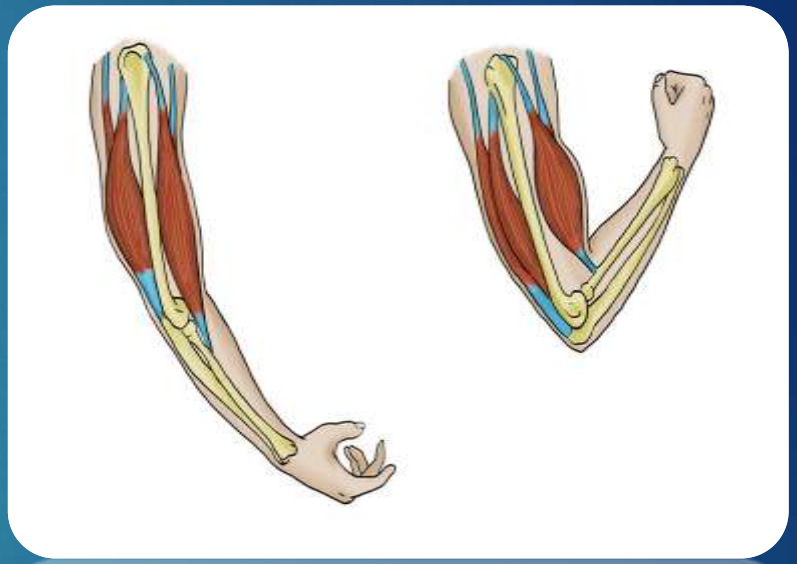
Basic key Point 3

Mobility means restore ROM by stretching exercises, Mobilizing ex and strengthening ex for superficial muscles (mobilizer)



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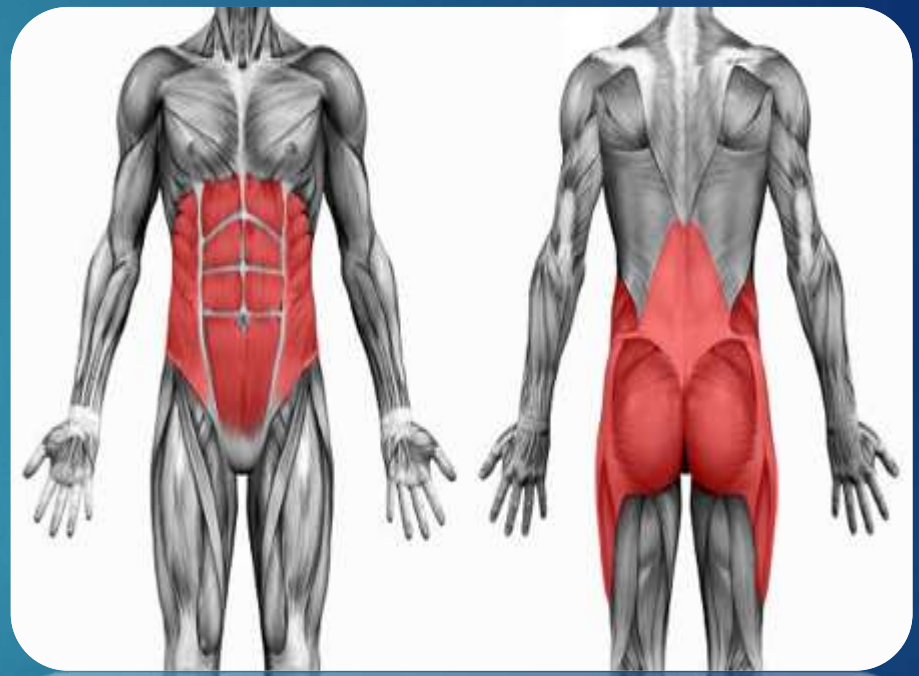
Basic key Point 4

Stability means restore stability for the proximal part to mobilize the distal part by strengthening ex for the deep muscles (stabilizers)



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Basic key Point 5

Controlled mobility means restore the normal pattern of movement by training patients on the correct pattern of movement (functional training)

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Basic key Point 6

Posture is the base on which all movements and function occur

It is the way by which Body parts arranged over each other

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Basic Key Point 7

Optimal Human Movements
Optimal Function

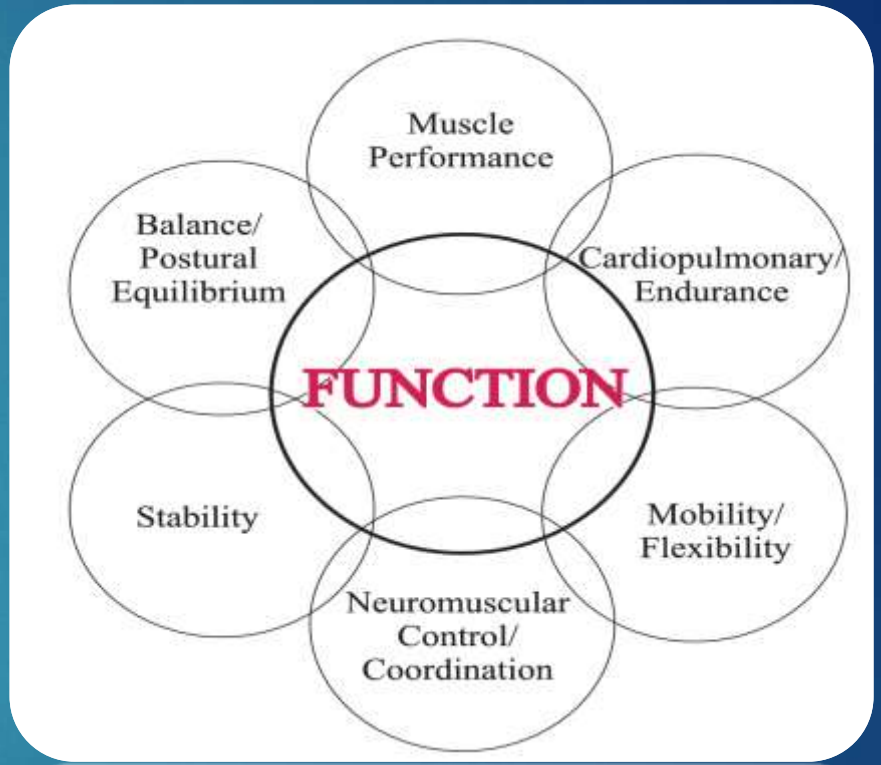
Needs

Optimal joints ROM

Optimal muscles function

Optimal motor control

Optimal posture



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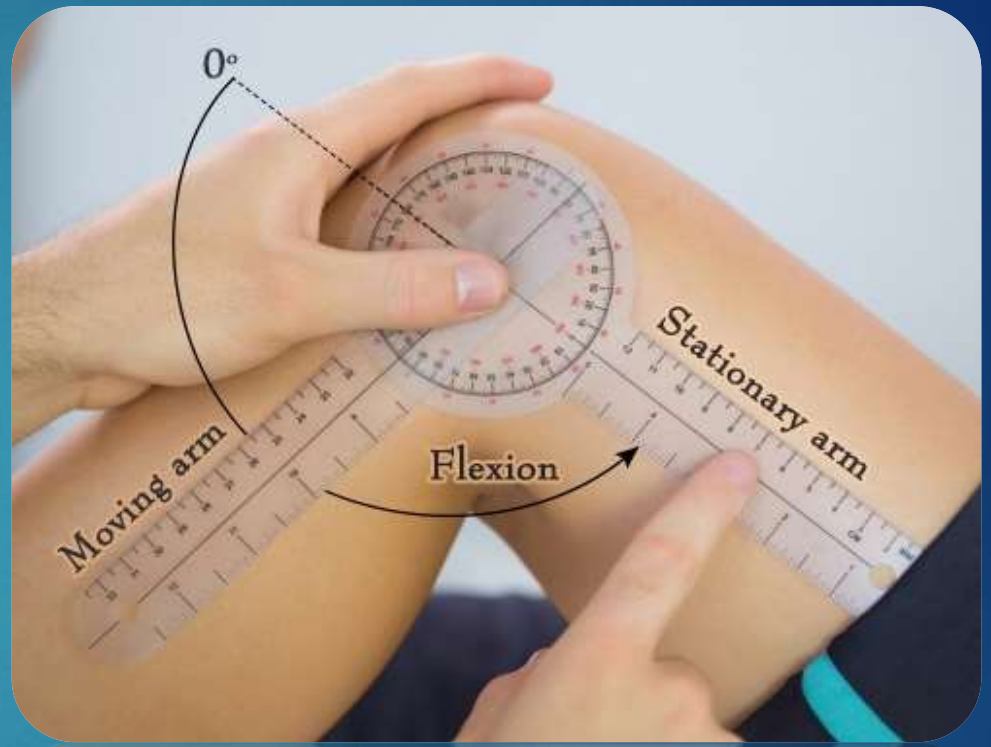
Basic Key Point 8

Restoring Range of motion is the 1st step to achieve your goal which is restoring patient's functional level before injury



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Basic Key Point 9

End feel is the type of resistance you feel during applying pressure at the end of the available range

It may be

Hard due to bony block
Firm due to soft tissue shortening
Soft due to soft tissue edema
Springy due to torn meniscus
Empty due to fracture or tumor

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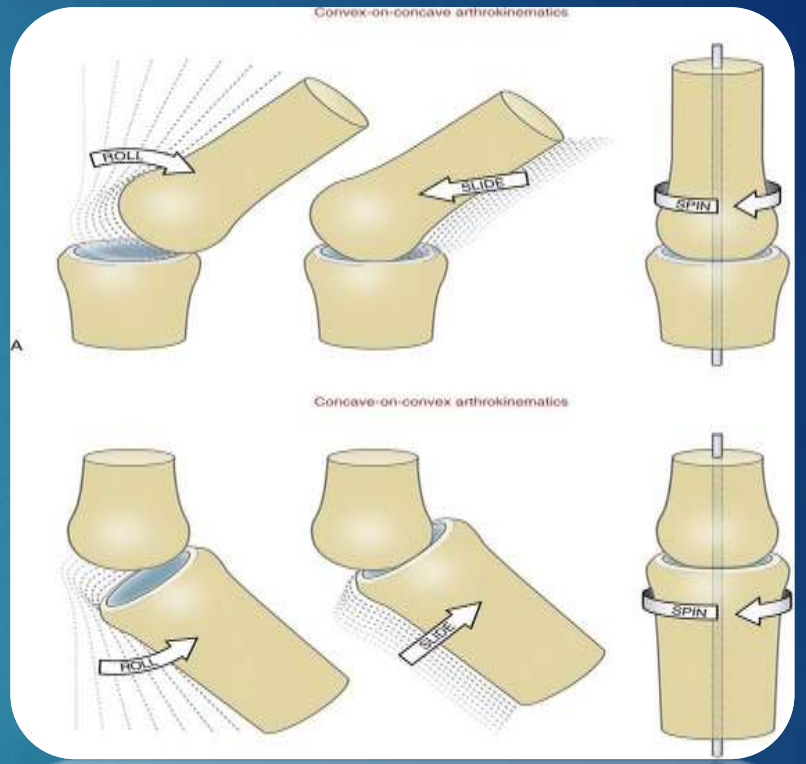
Basic Key Point 10

For full ROM consider accessory movement like rolling gliding and spinning as well as physiological movement like flexion-extension, abduction-adduction and internal – external rotation



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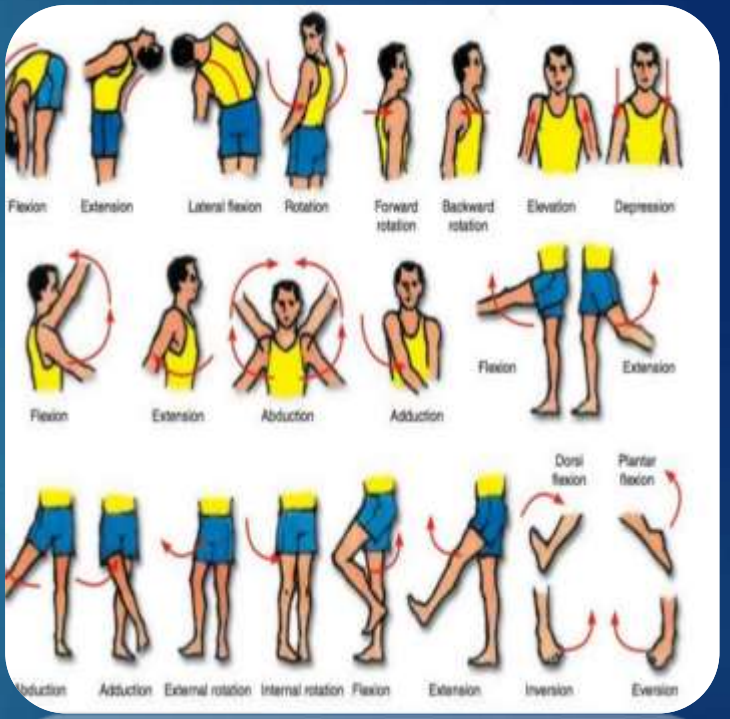
Basic key Point 11

Osteokinematics or Physiologic Motion:

Gross movements of limbs relative to the body Like flexion extension abduction adduction external rotation internal rotation

Occurred by active and passive ROM exercises



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Basic key Point 12

Arthrokinematics or Accessory Motion: Relative motions that occur between articular surfaces These motions include roll, spin, glide, roll-glide that occurred in conjunction with physiological movement for full ROM or as response for external force like joint mobilization

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BASIC KEY POINTS 13

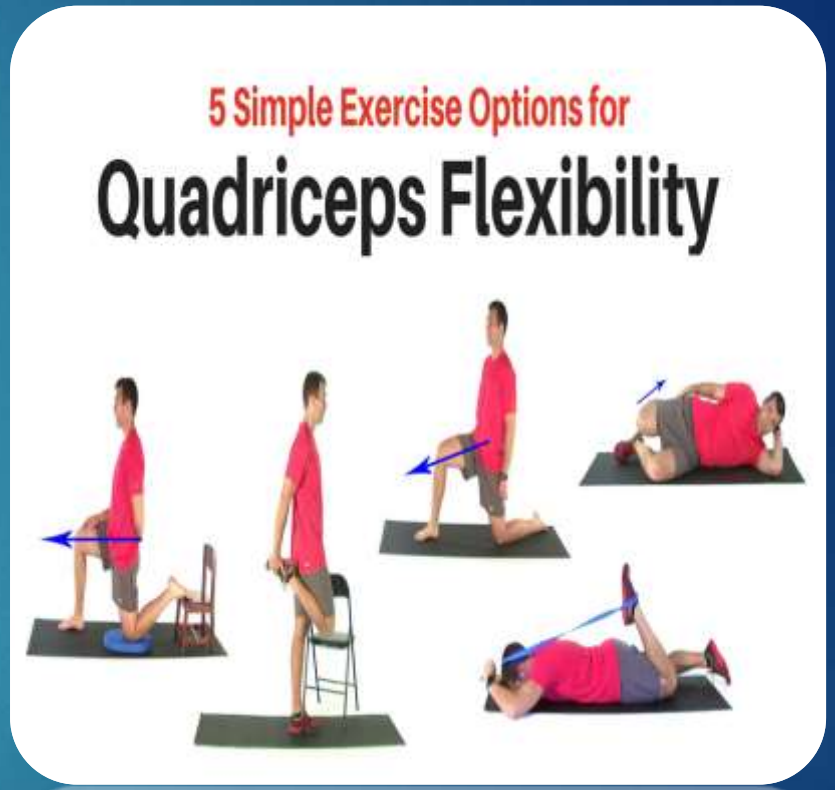
To increase ***ROM***

Stretch shortened muscles

Activate muscles responsible *for limited ROM*

Joint mobilization to restore accessory movement

Mange intra-articular causes which limit ROM



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Basic Key Point 14

Activation of muscles in the newly gained ROM is a must to maintain this ROM

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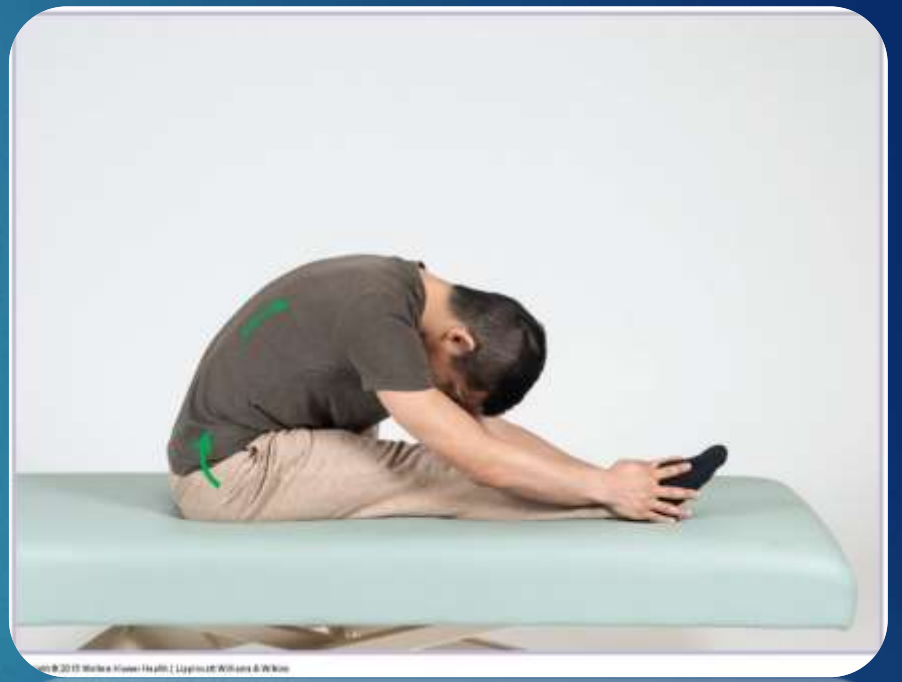
Basic key Point 15

Static stretching is effective in increasing ROM. The greatest change in ROM with a static stretch occurs with holding time between 15 and 30 seconds and 3 to 5 repetitions



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Basic Key Point 16

Restoring normal neuromuscular function is the 2nd step to achieve your goal which is restoring patient's functional level

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Basic Key Point 17

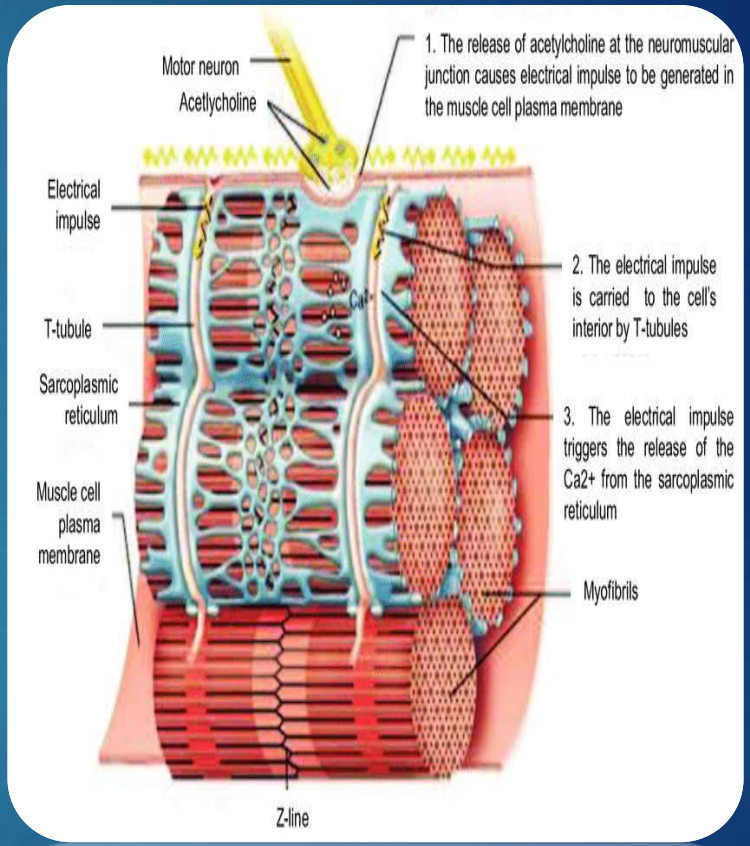
Neuromuscular function include

Initiation

Strength

Endurance

Elongation



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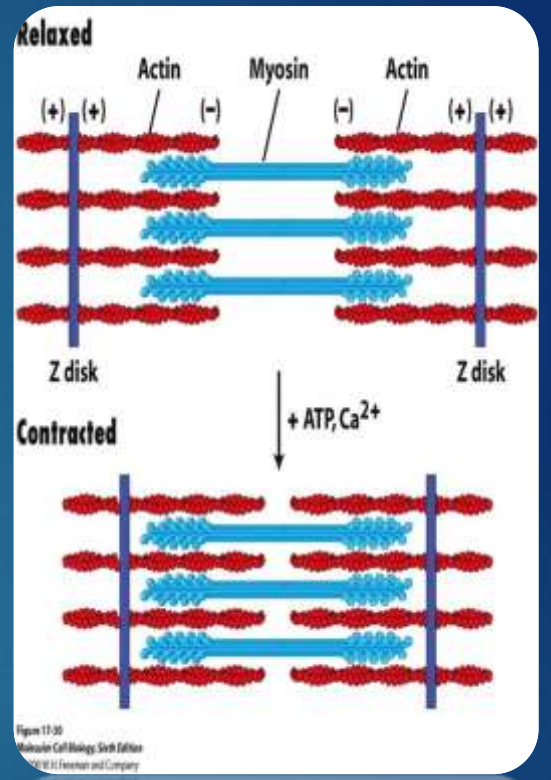
Basic Key Point 18

Tensed muscle increase of the muscle firing state (same muscle length)
-May be due to inhibited antagonist muscles
-May be due converted muscle function from tonic to phasic

It needs inhibitory techniques like prolonged stretching and prolonged icing



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Basic Key Point 19

Tight muscle invasion of passive component (connective tissue) to muscle fiber to decrease the energy demands needed by the tensed muscle and it becomes shorter in length

It needs inhibitory techniques, stretching exercises and positioning (1st degree muscle length disorder)

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Basic Key Point 20

Spasmed muscle persistent strong muscle contraction during rest may be due to pain or due to decrease in blood supply

It needs to treat the cause of pain in neurogenic spasm and to increase blood supply in chemical spasm

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Basic Key Point 21

shortened muscle reversible decrease of the muscle length due to bad habits without over activity of the muscle

It needs stretching exercises, positioning, strengthening exercises to antagonist and splinting (2nd degree muscle length disorder)

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Basic Key Point 22

contractured muscle irreversible decrease of muscle length due to diminish of blood supply to the muscles and conversion from muscular tissue to fibrous tissue

It needs surgical interference (3rd degree muscle length disorder)

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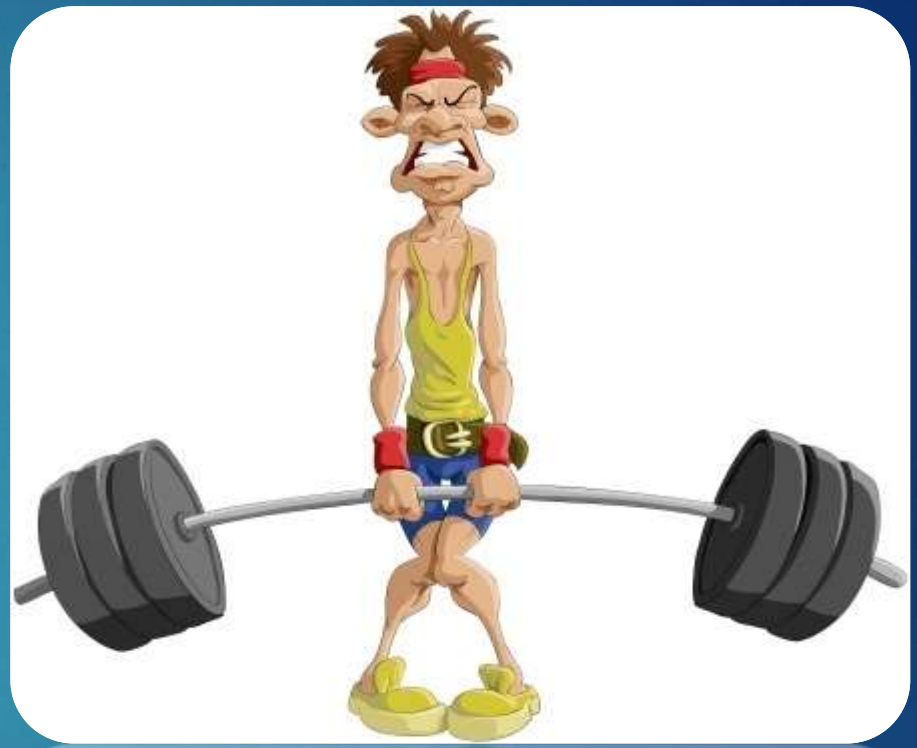
Basic Key Point 23

weakened muscle decrease in muscle size and tension which it produce

it needs progressive resisted exercises



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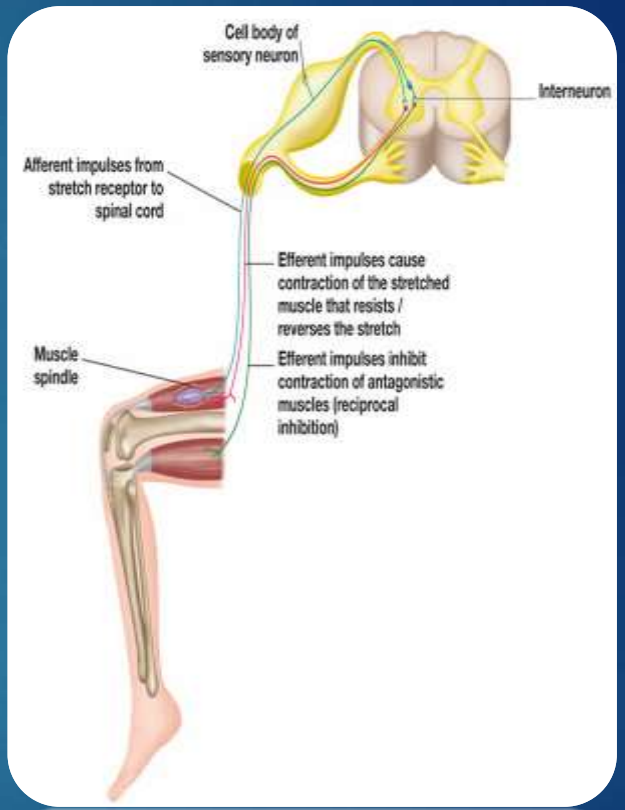
Basic Key Point 24

inhibited muscle decrease of excitatory impulses from nervous system for the muscle

it needs facilitatory techniques like quick stretch and quick icing



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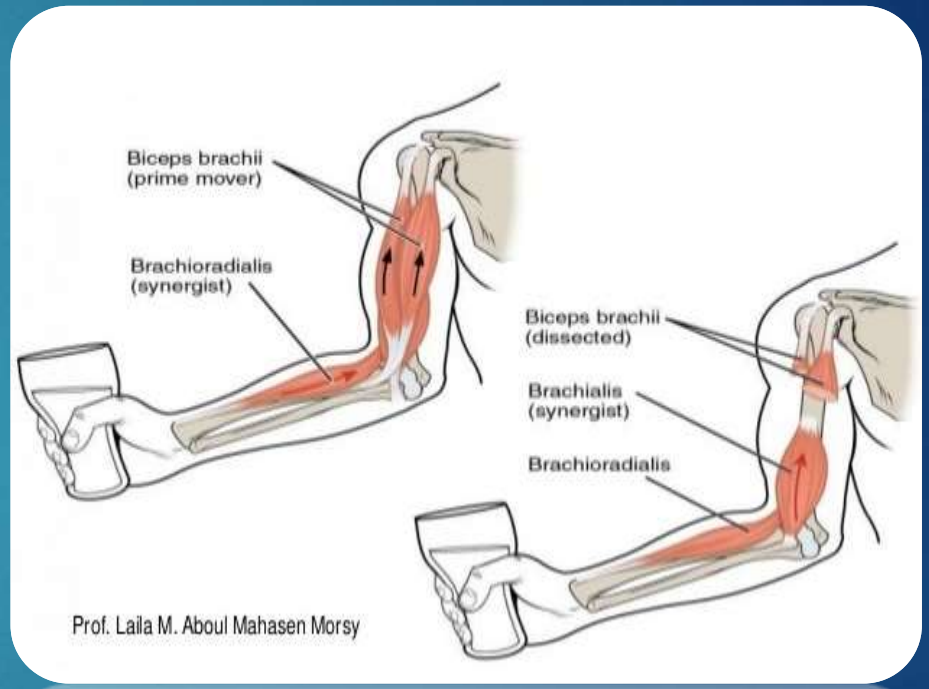
Basic key Point 25

For any movement production we need

Prime movers muscles which produce the actual movement

Secondary movers (synergists) muscles which assist the prime mover to produce the actual movement

Stabilizers muscles which stabilize the proximal joint to produce the movement in distal joint



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Basic key Point 26

As **A movement therapist** you have to restore the affected movements by considering the prime movers, synergists or secondary movers and stabilizers

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Basic key Point 27

Some times muscles have certain changes which affect their ability to do their movements like weakness

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Basic Key Point 28

Activation of a muscle it is any muscle training against resistance below than 70% of its 1repeatation maximum

Strengthening of a muscle it is any muscle training against resistance above than 70% of its 1repeatation maximum

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Basic Key Point 29

Do not start strengthening exercises until you regain full ROM

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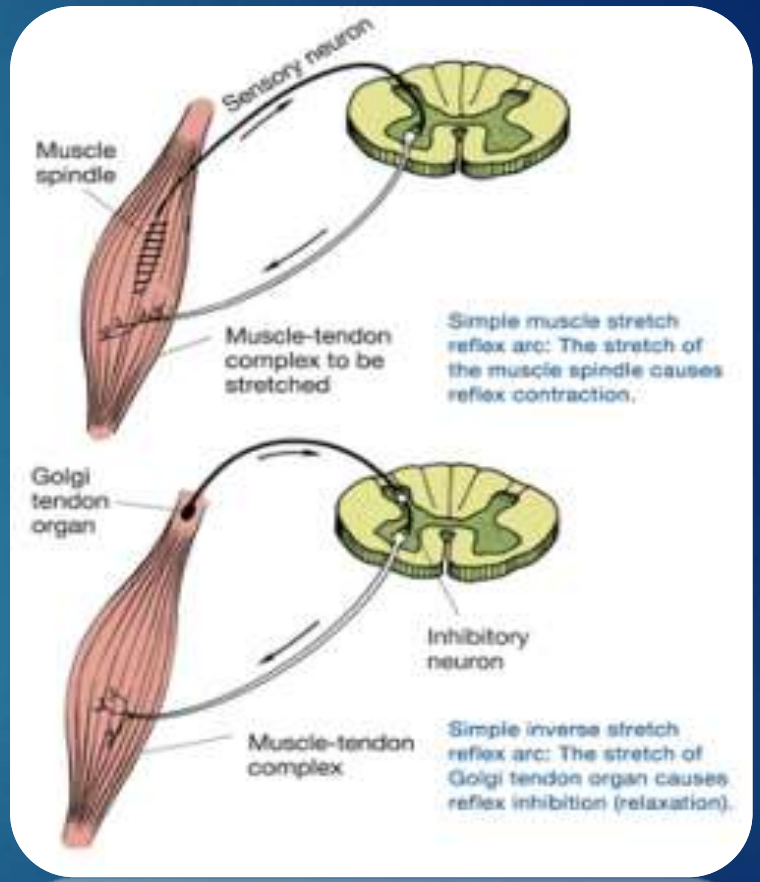
Basic key Point 30

Muscle energy technique (MET)

It is one of the most important manual therapy techniques which used to mange the muscle over activity state

through Autogenic inhibition or Reciprocal inhibition



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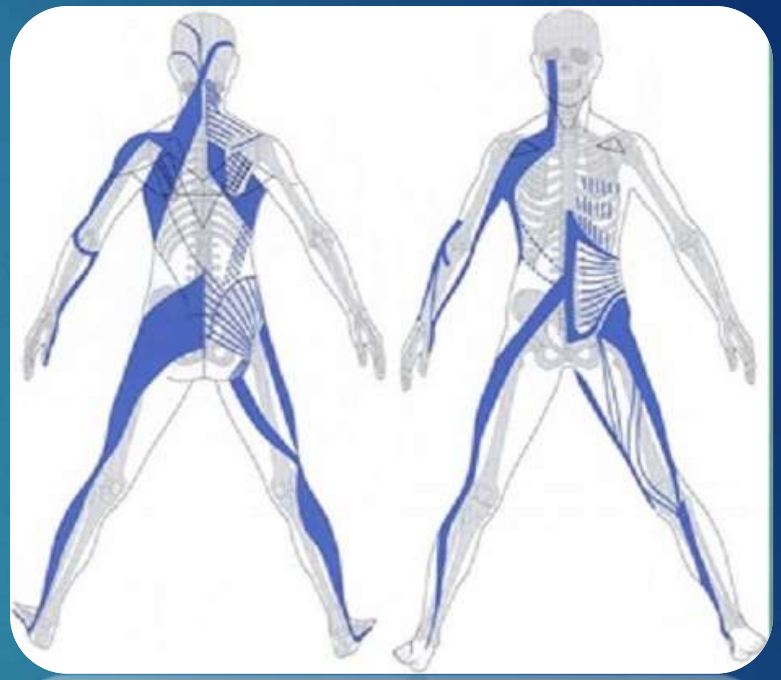
Basic Key Point 31

Muscles over activity is normal response for increased demands upon muscles

Muscles trying to compensate weakness of another muscles in the same chain to do certain function



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Basic Key Point 32

Managing muscles over activity problem needs not only to release them but also to strengthen the weak muscles in the chain and Activate antagonist muscles for the over activity ones

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Basic key Point 33

Active insuffiency Refers to inability of a two joint muscle to produce an effective muscle contraction over the two joints in the same time

example Rectus femoris which flex hip and extend knee can not produce powerful hip flexion with extended knee but it can with flexion knee that because

muscle tension –length relationship

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Basic key Point 34

Passive insuffiency refers to inability of a two joint muscles to be stretched over the two joints in the same time

Example hamstring muscles which pass across hip and knee joints stretch is more difficult when hip flexed and knee extended than when hip flexed with knee flexed

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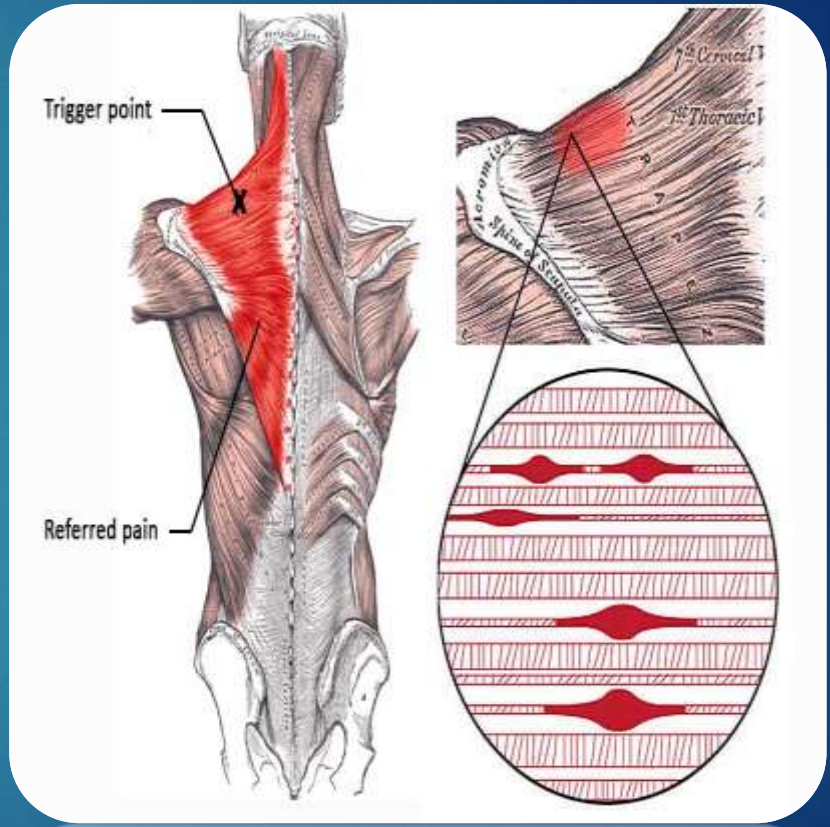
Basic key Point 35

To restore normal muscle function with patients suffering from trigger points in their muscles use these methods by same sequence

1-trigger point deactivation

2-myofascial release

3-muscle stretching



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Basic Key Point 36

Manual Pressure for 30 sec to 2 min over the trigger points (until pain change) helpful in Trigger point deactivation

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Basic Key Point 37

During patient assessment we think about myofascial chains as an expected cause for patient problem after we checked local area carefully and radiological examination for local area is free

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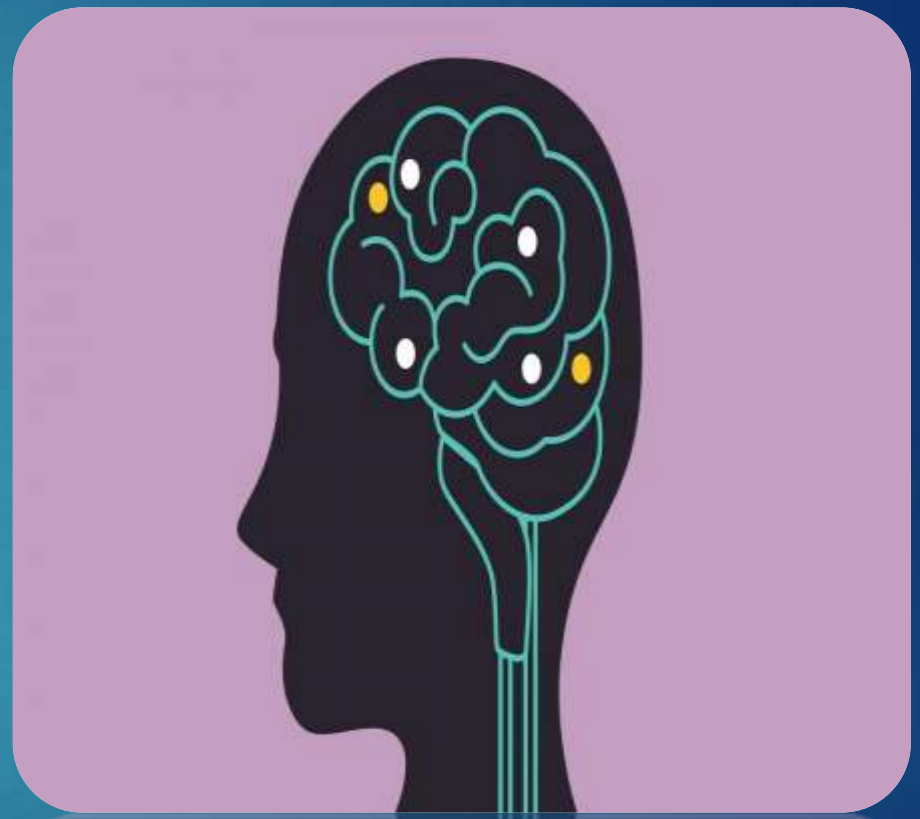
Basic key Point 38

Motor control is the 3rd step to achieve your goal which is restoring patient functional level



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Basic key Point 39

Human movement sequences

Trunk control

Proximal fixation

Distal localization

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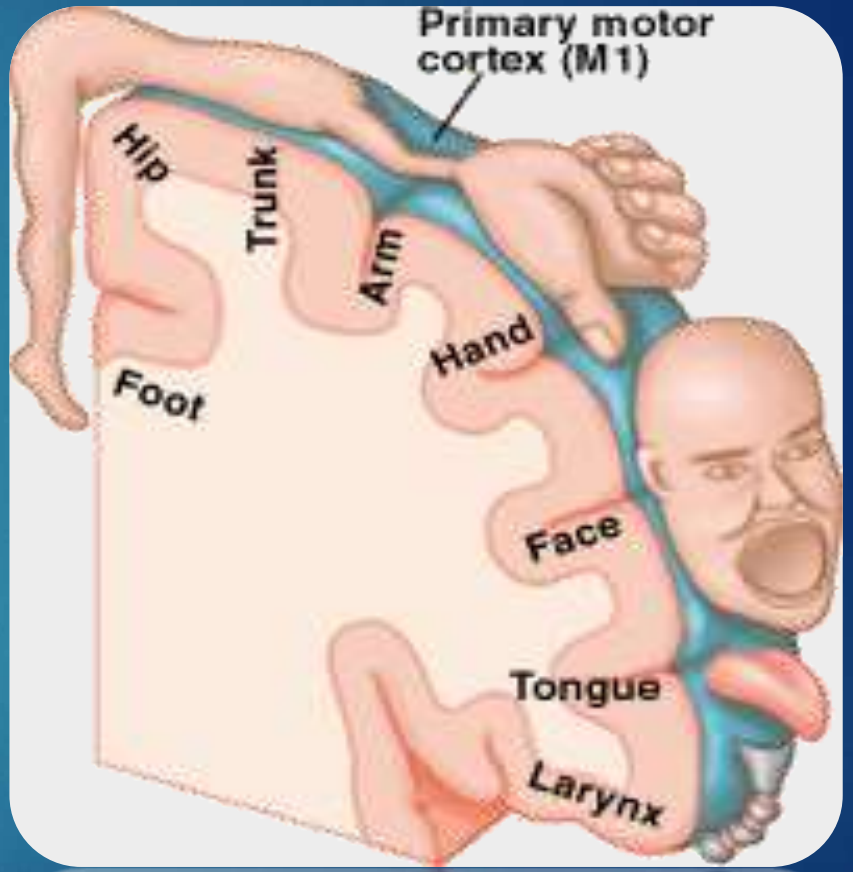
Basic key Point 40

Motor control include all brain engrams or movement pattern

The recorded sequence of movement in brain which occur in different joints by different muscles to do certain function



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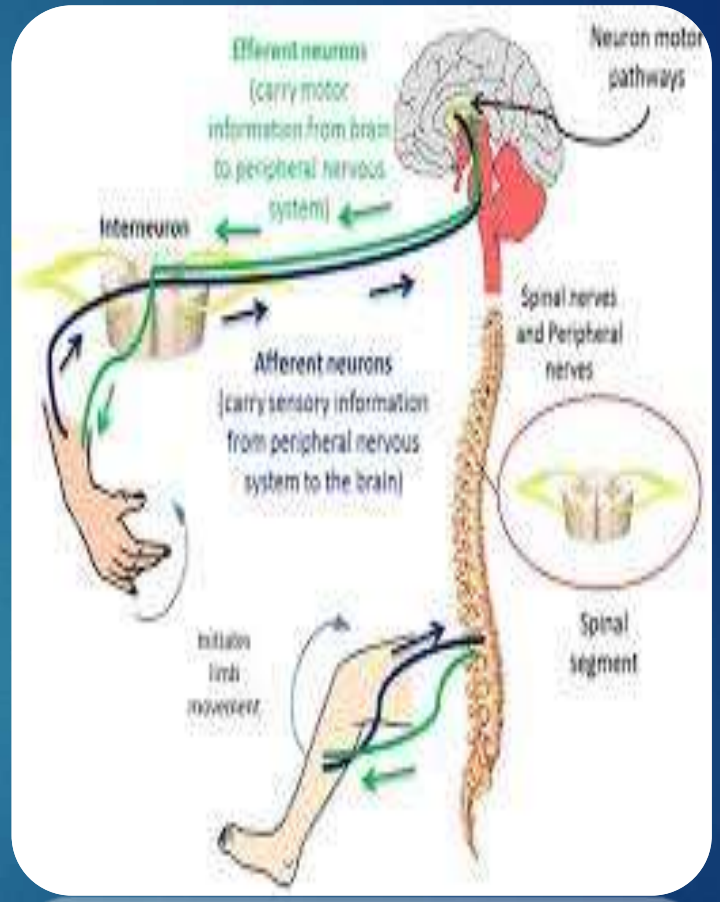
Basic key Point 41

After any injury patients usually do their functions in a different way than that they used to do before injury Like walking

This happened as a result of a change of joint ROM ,neuromuscular function

and pain



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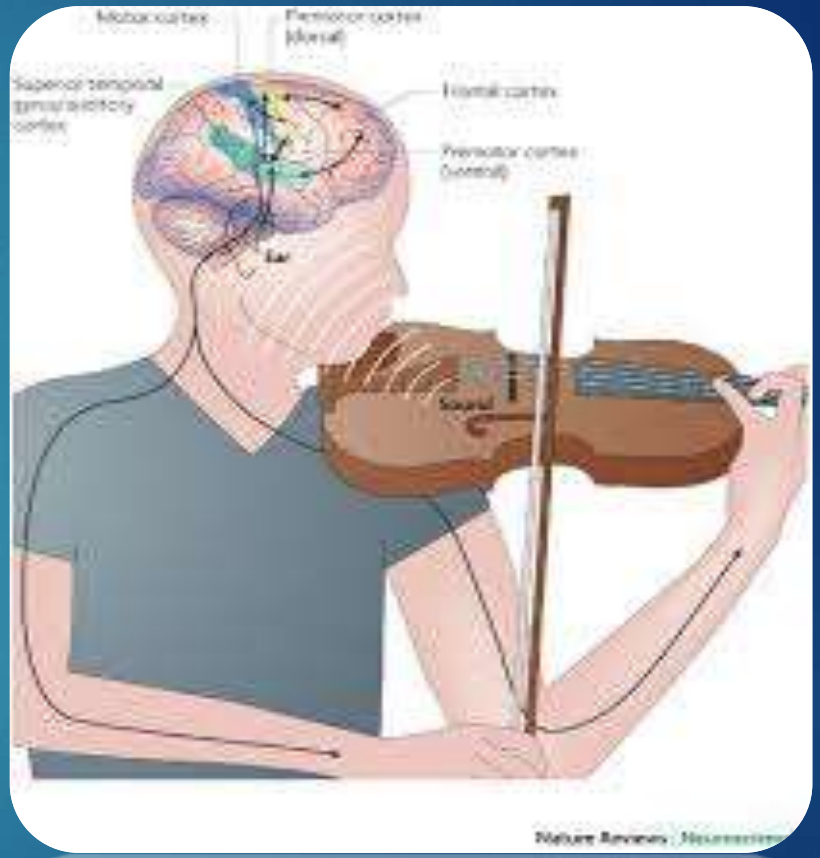
Basic key Point 42

New brain engram or new movement pattern will recorded in brain after a few days of an injury

As this is the way that patient practice in their activities of daily living



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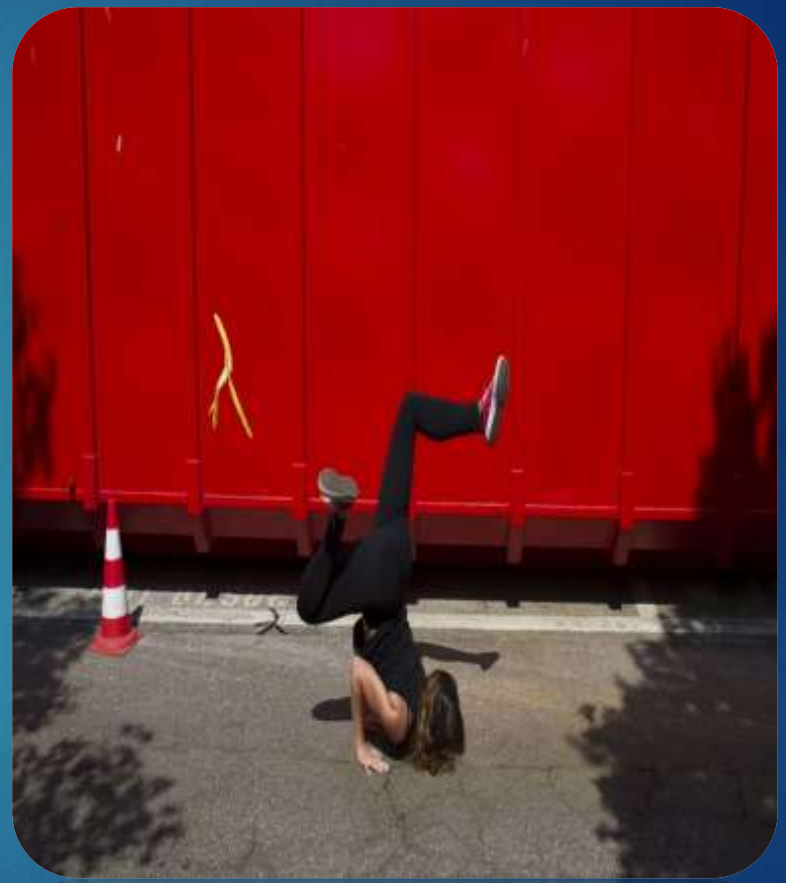
Basic key Point 43

After restoring ROM ,normal neuromuscular function we have to train the patient to his daily activities in normal sequences or normal movement pattern

Functional activities



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Basic Key Point 44

Restoring normal posture is the 4th step to achieve your goal which is restoring patient's functional level

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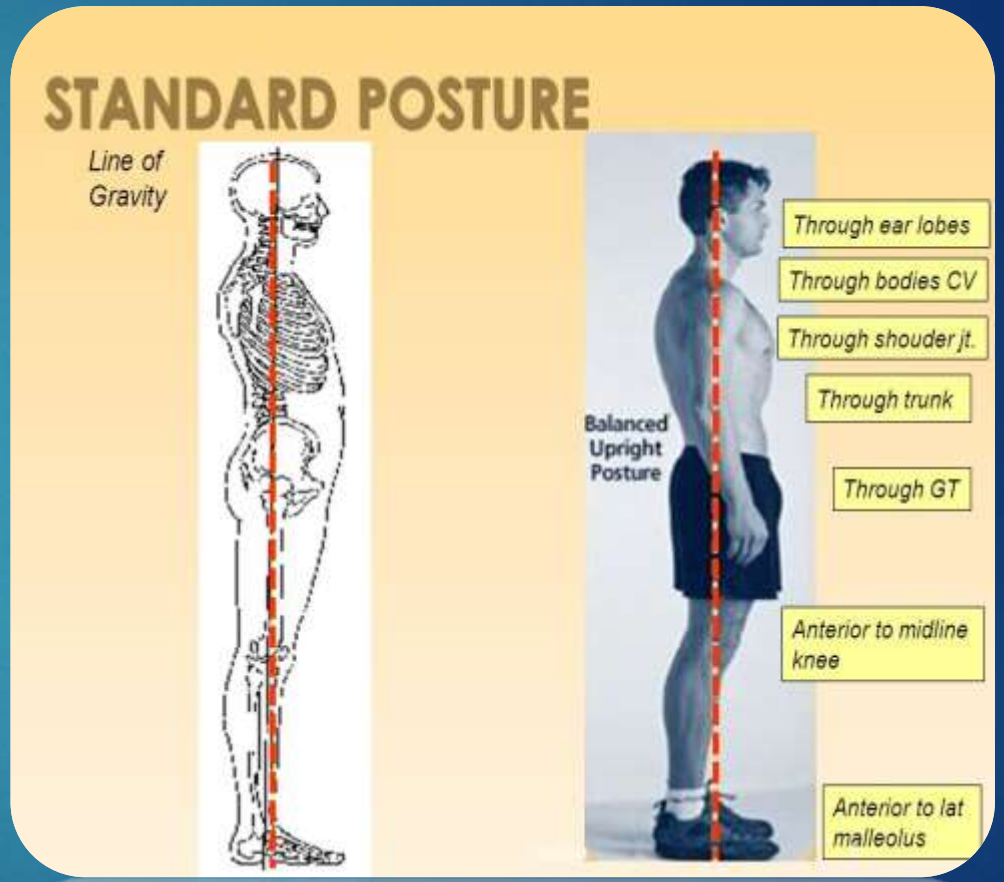
Basic key Point 45

Normal posture needed for normal movements and function

Postural faults must be corrected if we want normal movements and function



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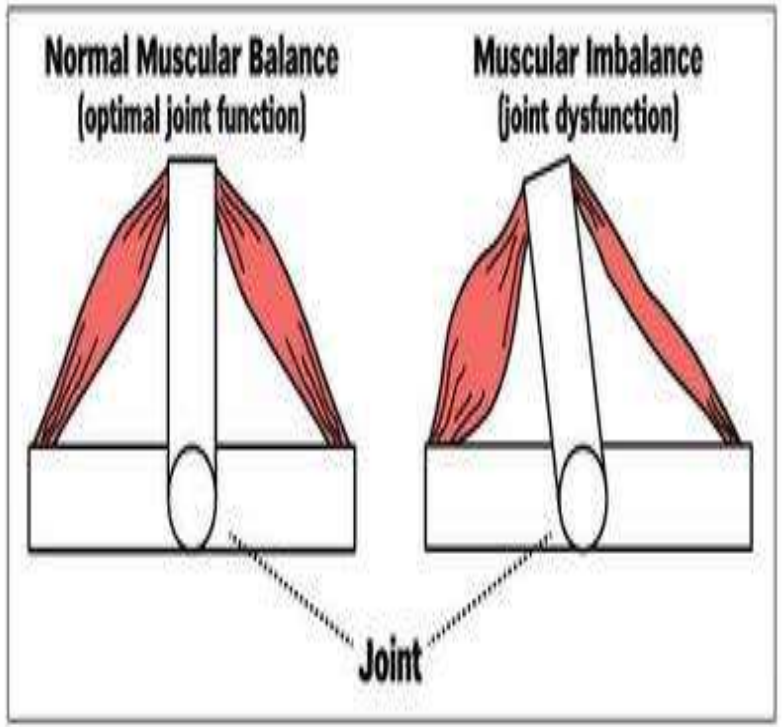
Basic key Point 46

Postural faults resulting from **Muscle imbalance**

Imbalance between agonist and antagonist acting on certain joints



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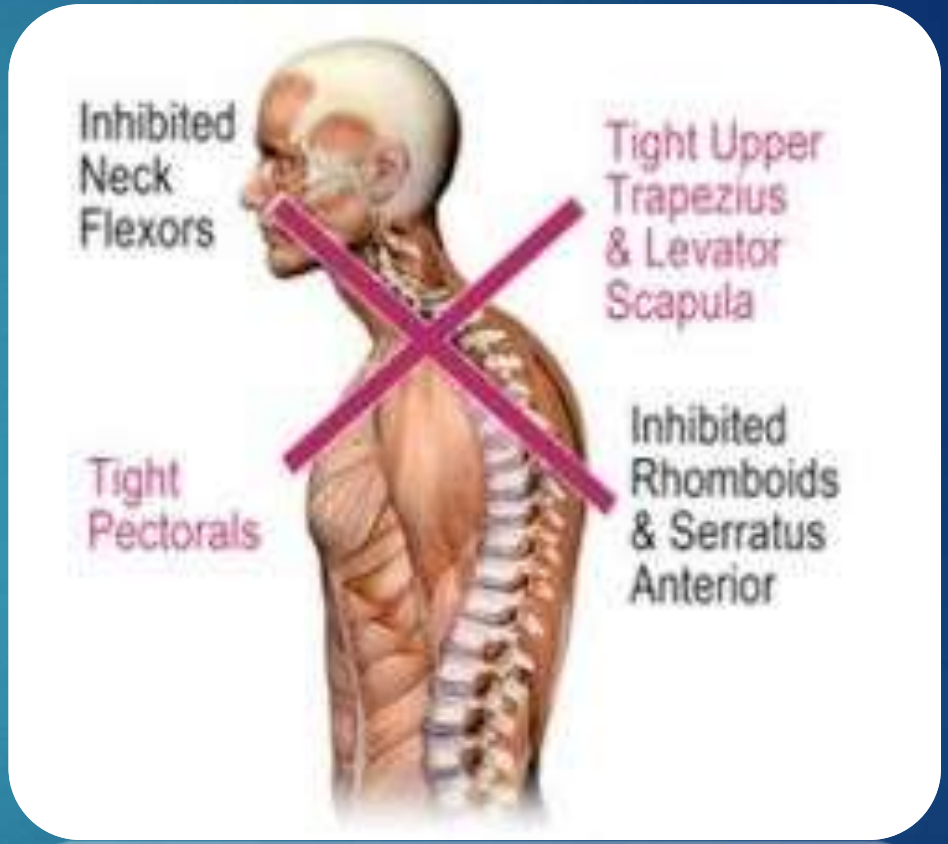
Basic key Point 47

Upper crossed syndrome

Forward head

Affects

Cervical spine and upper limb function



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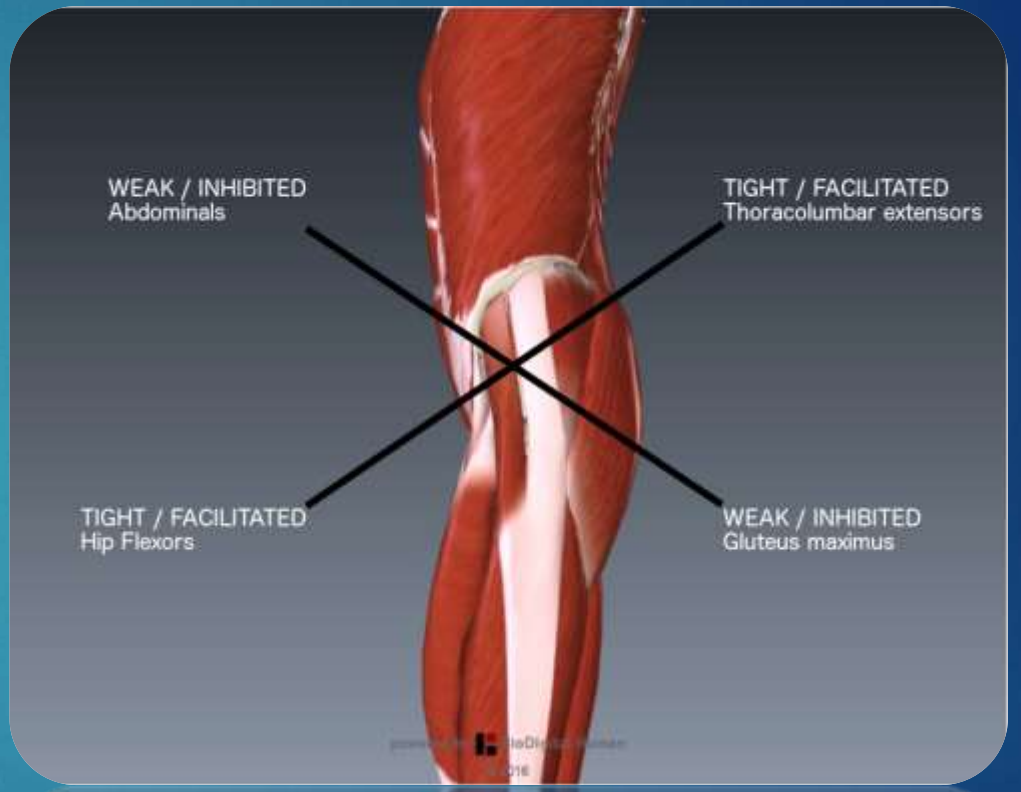
Basic key Point 48

Lower crossed syndrome

Anterior pelvic tilting

Affects

Lumbar spine and lower limb function



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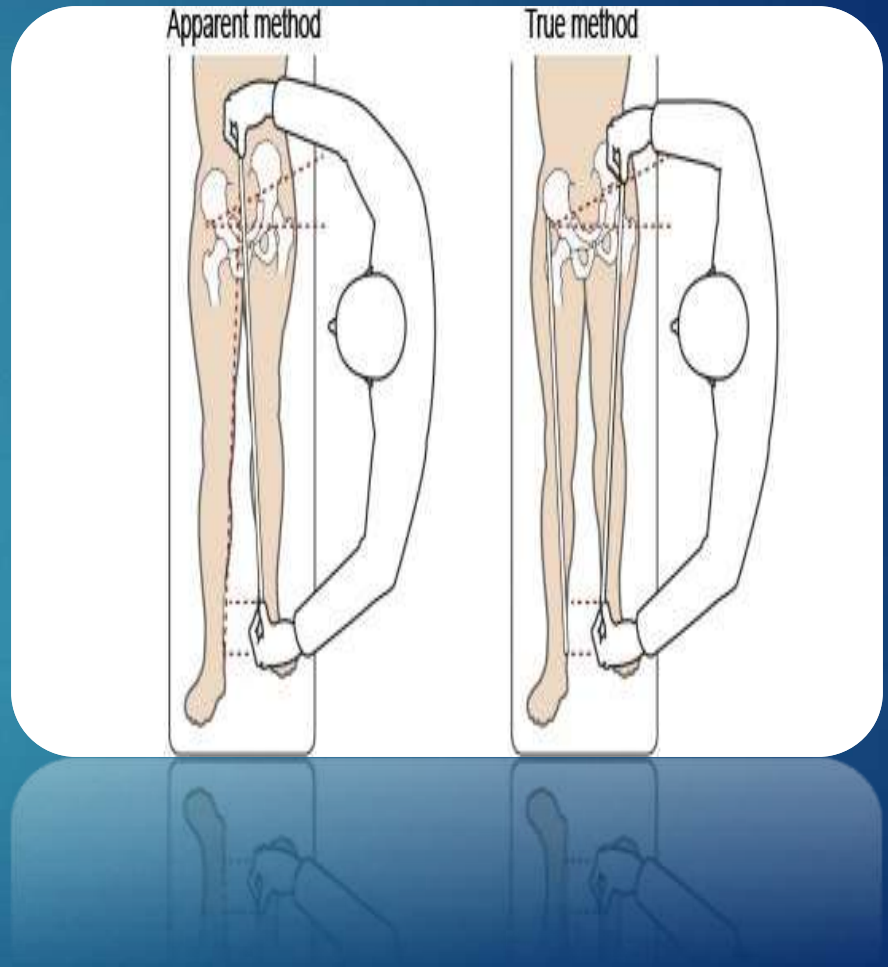
Basic Key Point 49

Detecting and correcting leg length discrepancy using insole for example is the main solution for many postural, pelvic and foot problems



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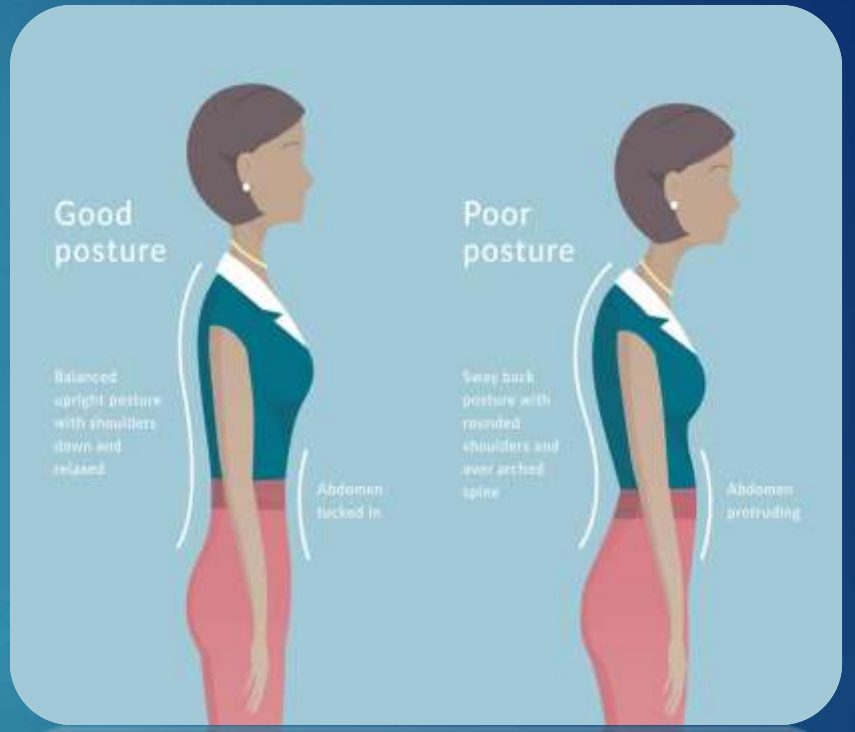
Basic Key Point 50

Correction of fault or bad posture is very important to relief pain



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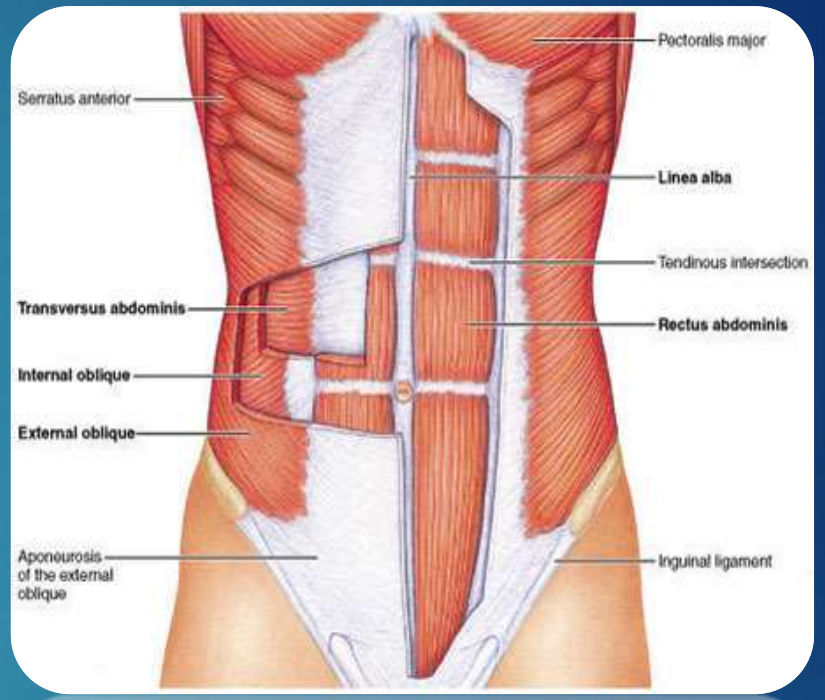
Basic Key Point 51

Core stability training is a corner stone in both upper and lower limbs injuries



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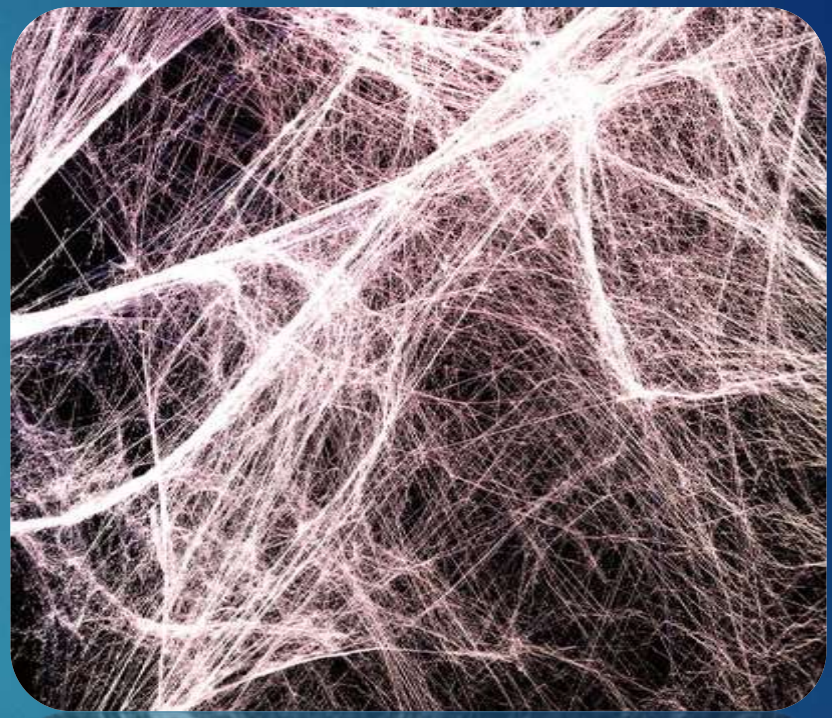
Basic Key Point 52

Fascial restriction around ankle joint may be the root cause of low back pain



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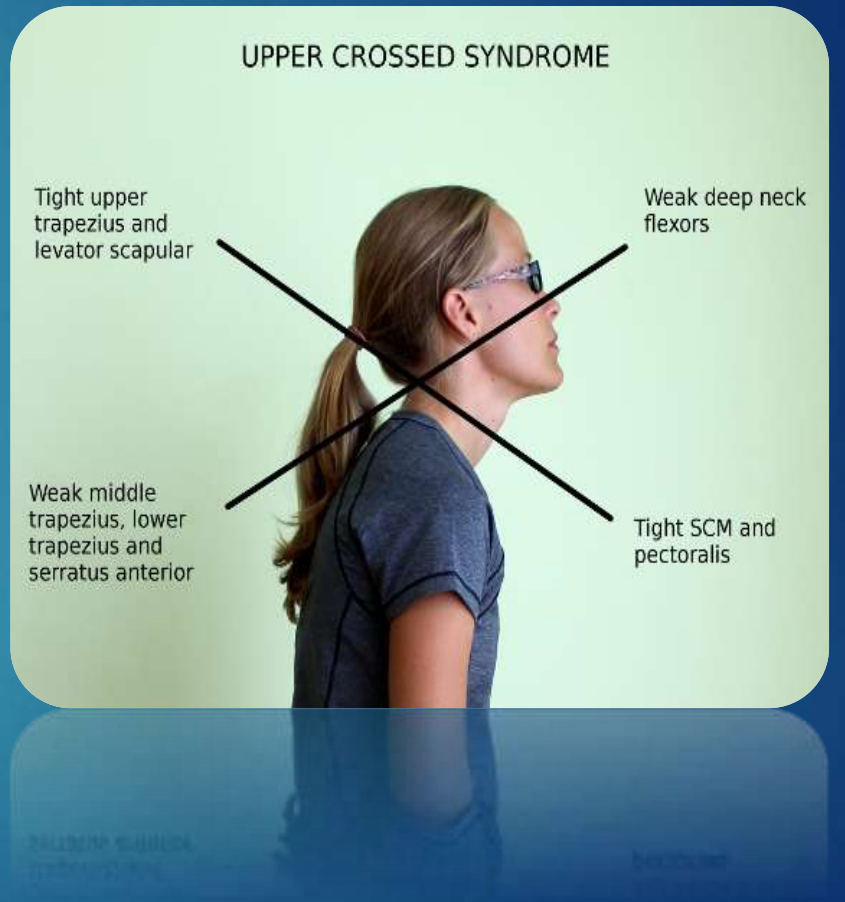
Basic key Point 53

It is important to check the upper crossed syndrome while dealing with cervical spine and upper limbs problems



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Basic key Point 54

It is important to check lower crossed syndrome when dealing with patient with lumbar spine and lower limbs problems

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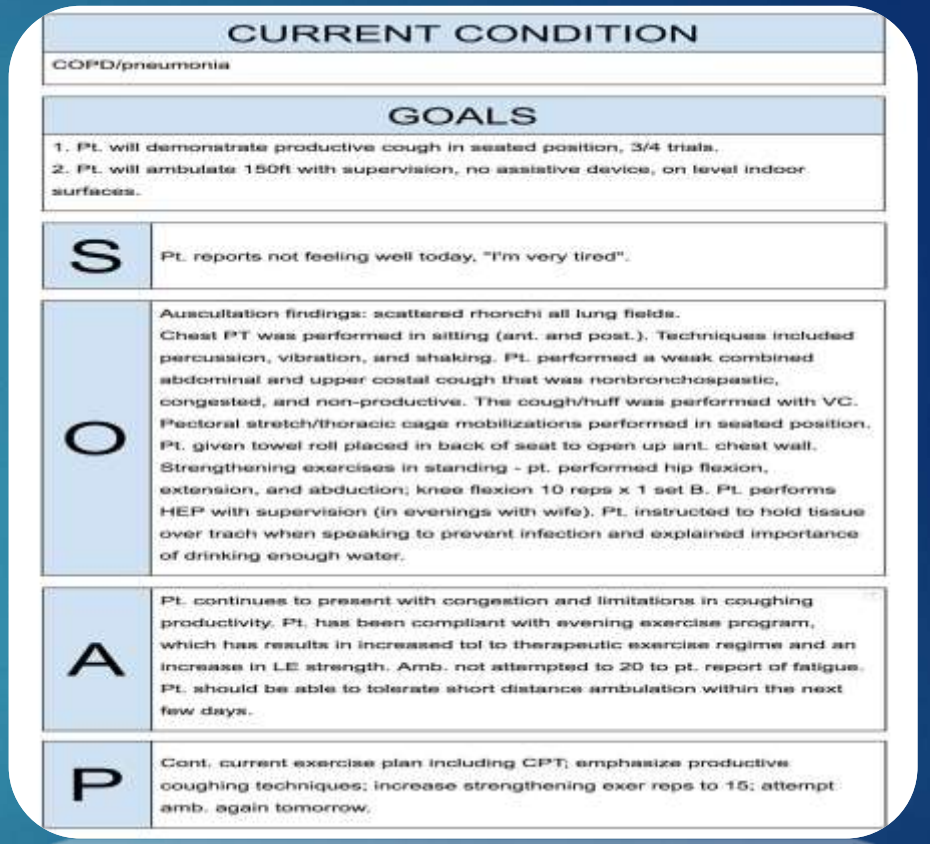
Basic key Point 55

Documentation

In physical therapy field

Is very important for continuity of care and communicate with other health care professionals

we usually use **SOAP** notes form for our practice documentation



CURRENT CONDITION	
COPD/pneumonia	
GOALS	
1. Pt. will demonstrate productive cough in seated position, 3/4 trials. 2. Pt. will ambulate 150ft with supervision, no assistive device, on level indoor surfaces.	
S	Pt. reports not feeling well today, "I'm very tired".
O	Auscultation findings: scattered rhonchi all lung fields. Chest PT was performed in sitting (ant. and post.). Techniques included percussion, vibration, and shaking. Pt. performed a weak combined abdominal and upper costal cough that was nonbronchospastic, congested, and non-productive. The cough/huff was performed with VC. Pectoral stretch/thoracic cage mobilizations performed in seated position. Pt. given towel roll placed in back of seat to open up ant. chest wall. Strengthening exercises in standing - pt. performed hip flexion, extension, and abduction; knee flexion 10 reps x 1 set B. Pt. performs HEP with supervision (in evenings with wife). Pt. instructed to hold tissue over trach when speaking to prevent infection and explained importance of drinking enough water.
A	Pt. continues to present with congestion and limitations in coughing productivity. Pt. has been compliant with evening exercise program, which has results in increased tol to therapeutic exercise regime and an increase in LE strength. Amb. not attempted to 20 to pt. report of fatigue. Pt. should be able to tolerate short distance ambulation within the next few days.
P	Cont. current exercise plan including CPT; emphasize productive coughing techniques; increase strengthening exer reps to 15; attempt amb. again tomorrow.

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Basic key point 56

Subjective

include all the patient description about his current status

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Basic key Point 57

Objective

Include all results about what you re-measure or retest as

a therapist

Also interventions details

Like frequency, duration and machines used

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Basic key Point 58

Assessment

Include your opinion and interpretation as a therapist about patient current status

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Basic key Point 59

Plan

Include what you plan do in future sessions for solving patient problems based on your assessment

Also home exercise program should be included

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Basic Key Point 60

Evidence based practice

Means that our methods or techniques we use to mange patients problems should have an evidence by research work

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Evidence based practice levels

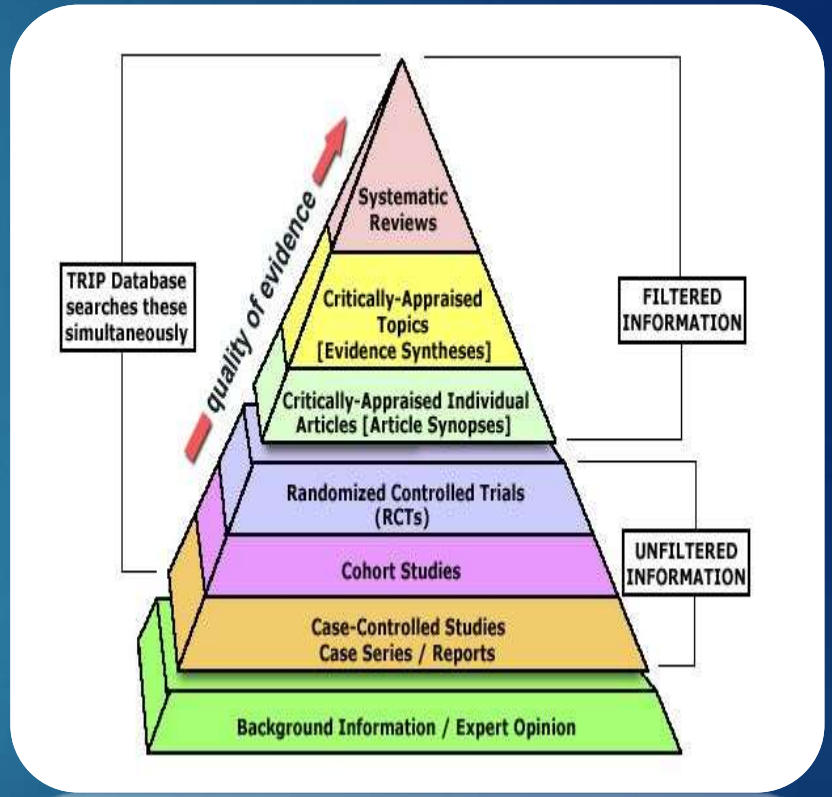
Systematic review which is the strongest evidence

Randomized controlled trial

cohort study

Case control study

Expert opinion which is the weakest evidence



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Regional
Basic Key Points

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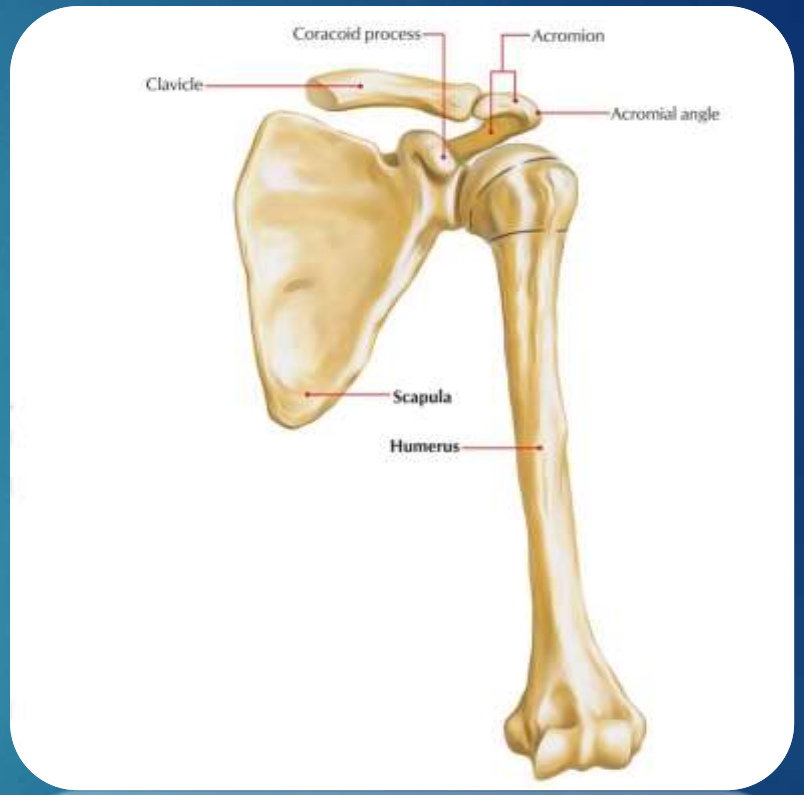
Basic Key Point 62

No real treatment for shoulder without care giving to scapula



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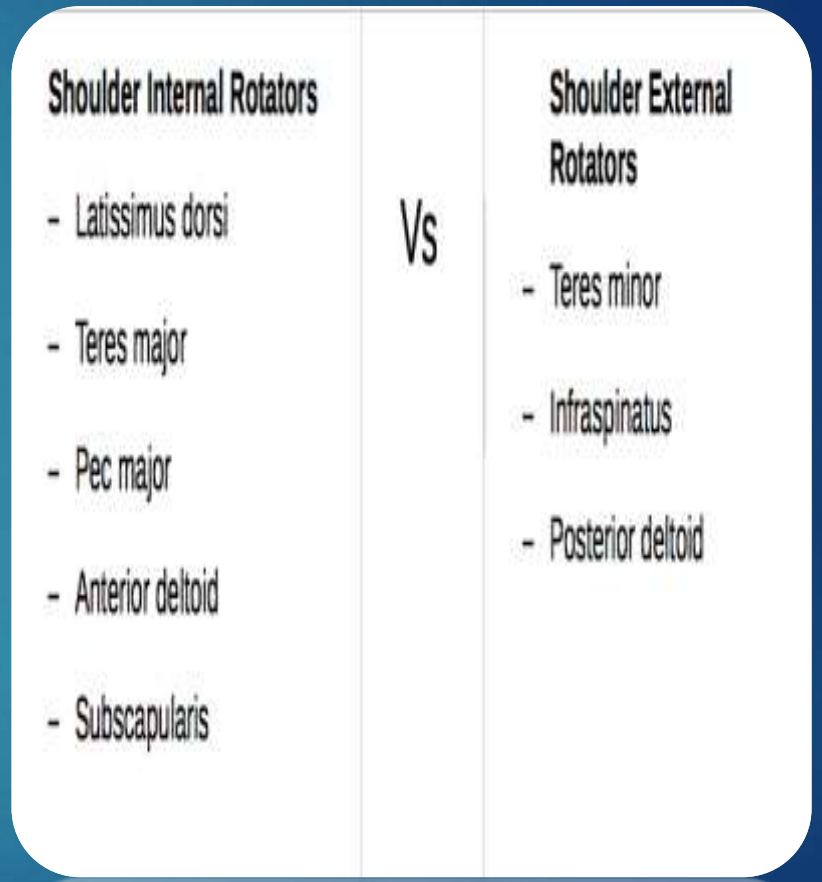
Basic Key Point 63

For normal shoulder joint function shoulder external rotators should be 60% to 70% of shoulder internal rotators strength that can be achieved through improve shoulder external rotators strength and mange shoulder internal rotators over activity



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Basic Key Point 64

Shoulder weight bearing exercises will improve shoulder stability which is needed for normal shoulder function

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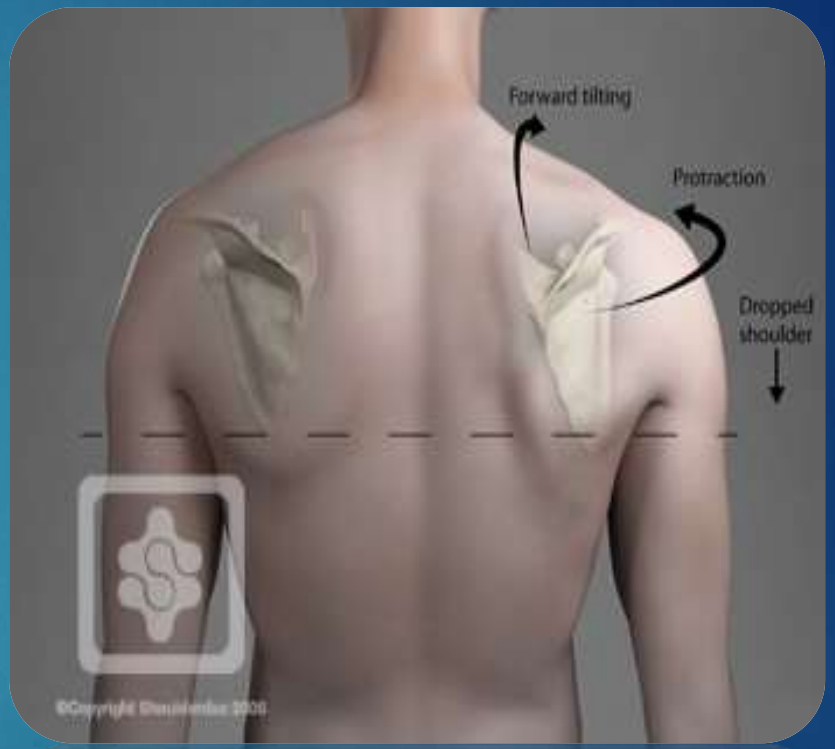
Basic Key Point 65

Managing scapular dyskinsia is a key stone for restoring normal shoulder function



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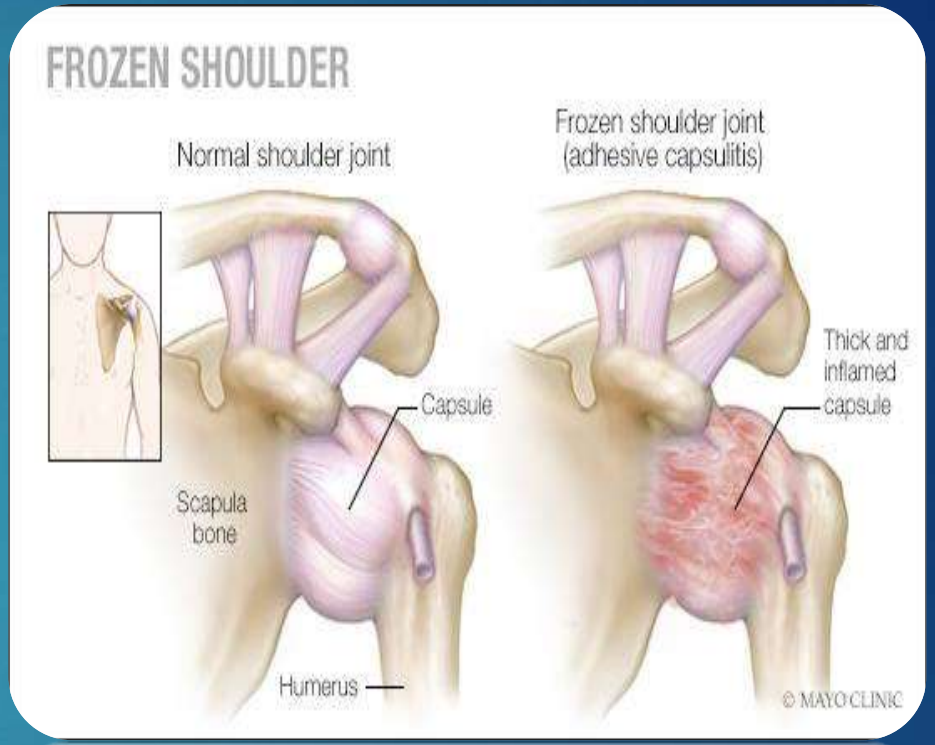
Basic Key Point 66

Shoulder mobilization techniques is the 1st line of treatment in frozen shoulder patients



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Basic Key Point 67

Restoration of muscle balance between upper fiber of trapezius and middle, lower fiber of trapezius is essential in mangling shoulder impingement patients

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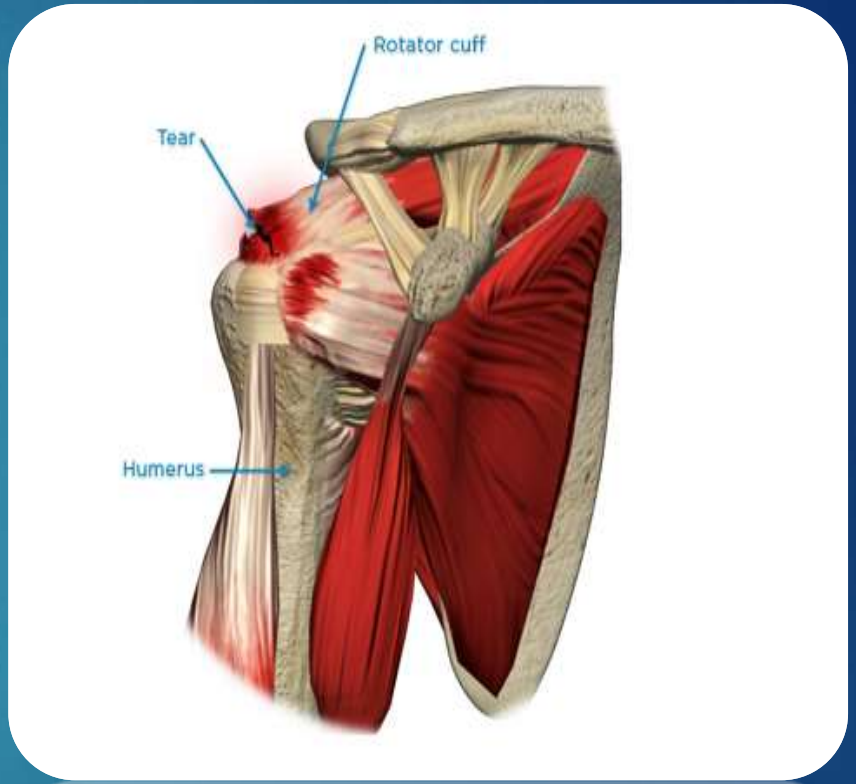
Basic key Point 68

patient who suffer from rotator cuff tendenopathy We have to achieve 2 main goals

maintain the head of humerus centered in the glenoid cavity in static and dynamic posture

maintain the subacromial space wide enough in static and dynamic posture



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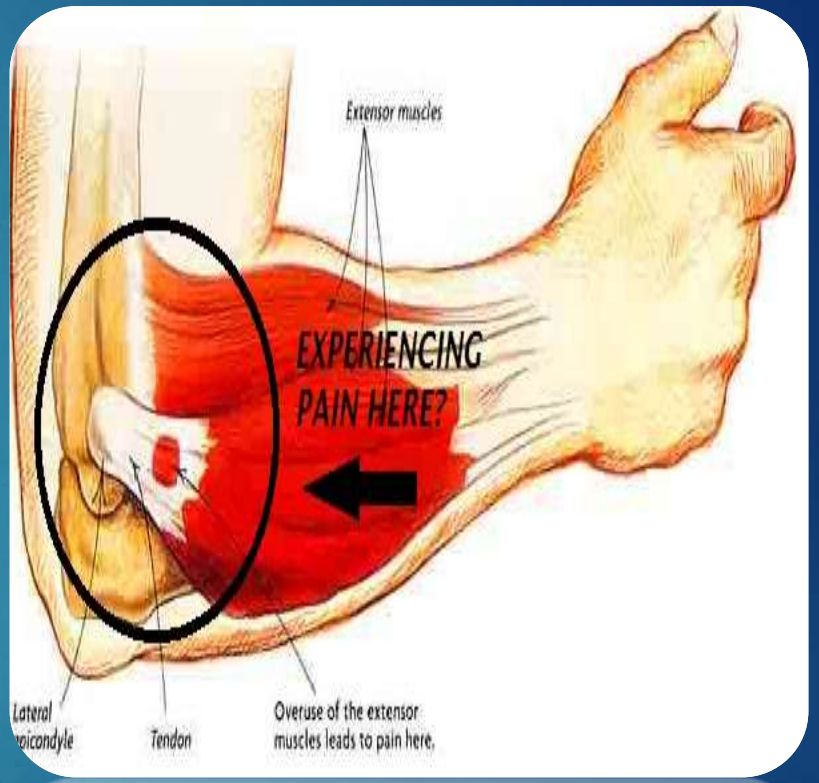
Basic Key Point 69

Eccentric contraction training for wrist extensors is a key stone in rehabilitation program for lateral epicondylitis patients (Tennis Elbow)



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Basic Key Point 70

Counter force brace (golfer's elbow band)is useful for medial epicondylities patients cause it decrease stress over common flexors tendon by creating new origin point for flexors tendon

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Basic Key Point 71

Splinting wrist in neutral position (slightly extended and ulnar deviated)during sleep and daily activities which increase patient symptoms plays an important role in decreasing symptoms of carpal tunnel syndrome patients who are not indicated for surgery

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Basic Key Point 72

Flexor tendon gliding is helpful for managing decreased flexibility of long finger flexors and limited ROM in digits in patients with carpal tunnel syndrome

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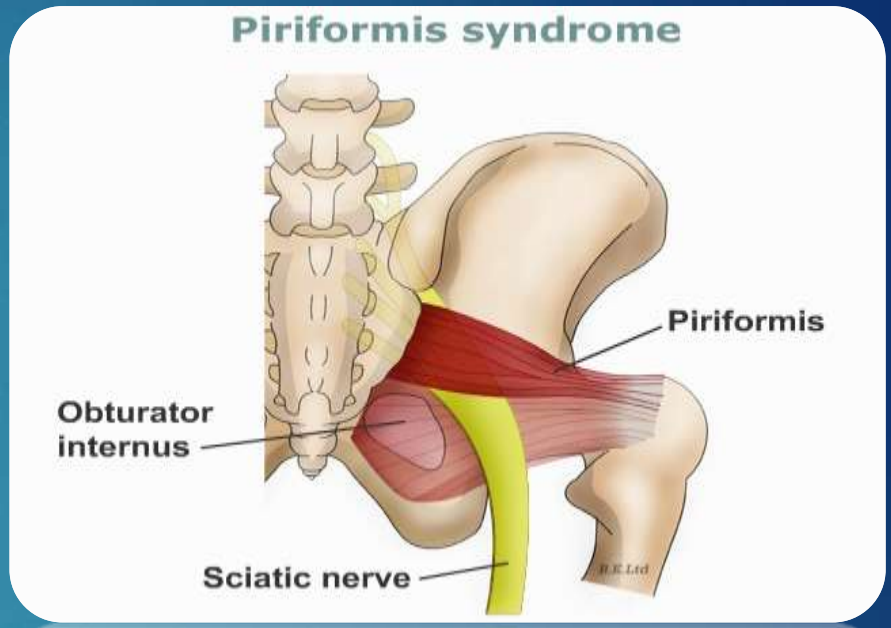
Basic Key Point 73

Patient with piriformis syndrome will benefit from adductors muscles strengthening rather than piriformis stretching



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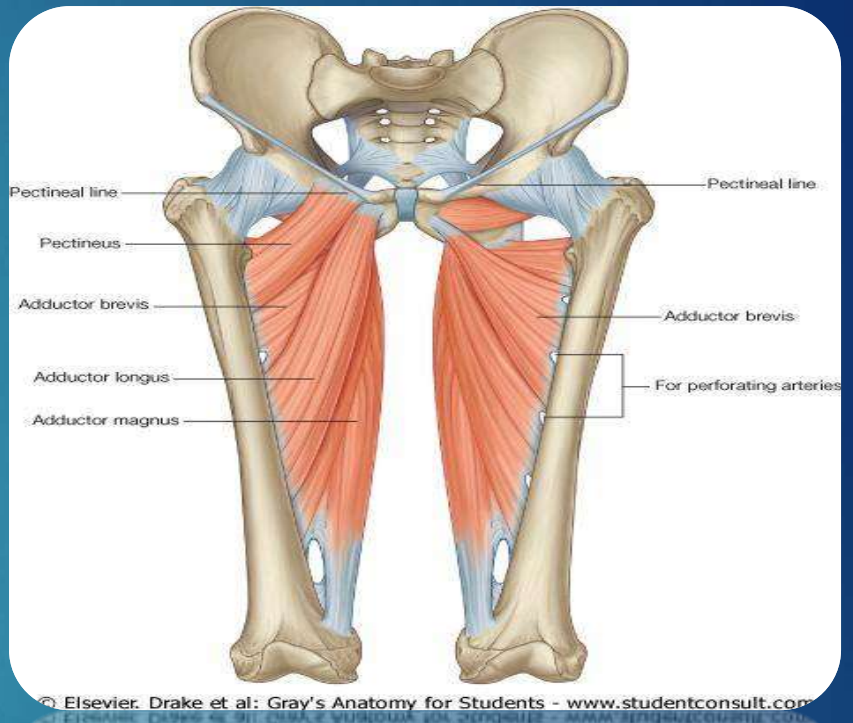
Basic Key Point 74

In adductor strain patients You have to treat the adductors , correct lower limbs mechanics, apply groin rehabilitation , apply core training and stretch pectoralis muscles



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Basic Key Point 75

Aquatic therapy is beneficial for hip osteoarthritis patients cause it provides environment for strengthening exercise for hip muscles with less stress on patient's hip joint

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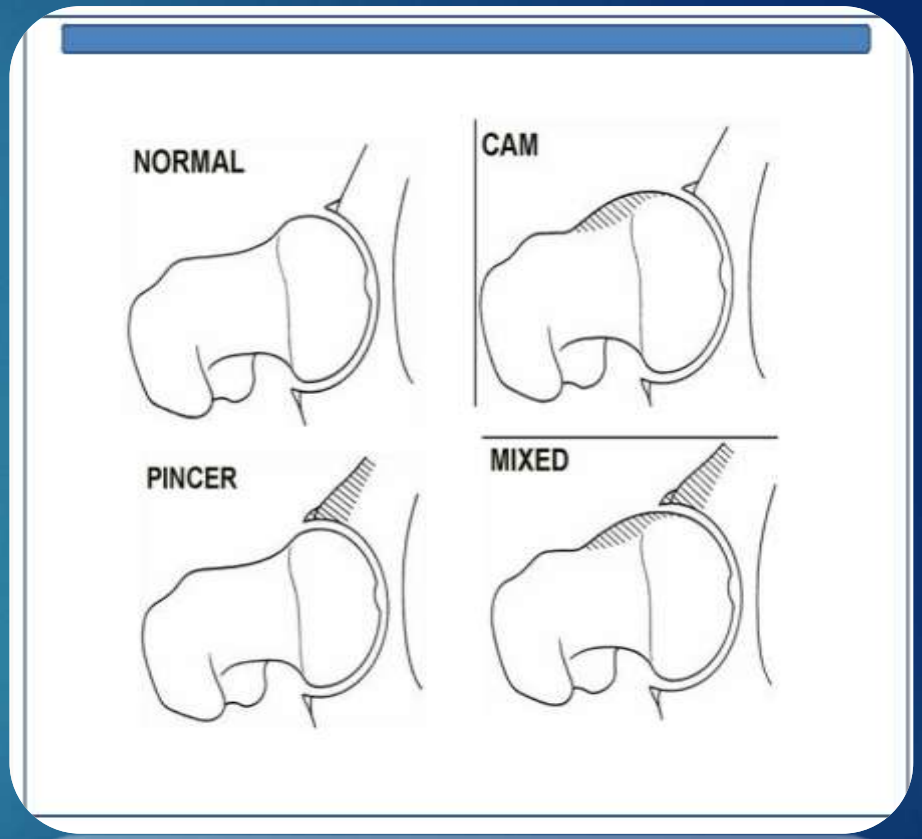
Basic Key Point 76

Improving hip joint dynamic stability by strengthening deep hip joint muscles (flexors-abductors-external rotators) is helpful for patients with femoro-acetubular impingement syndrome



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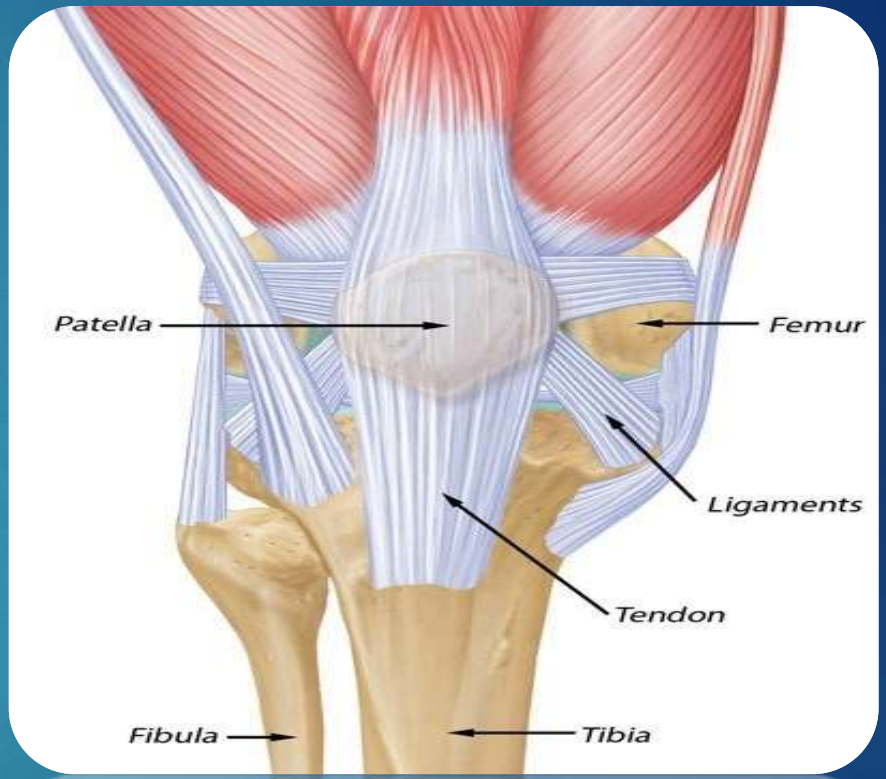
Basic Key Point 77

No real treatment for knee without care giving to patella



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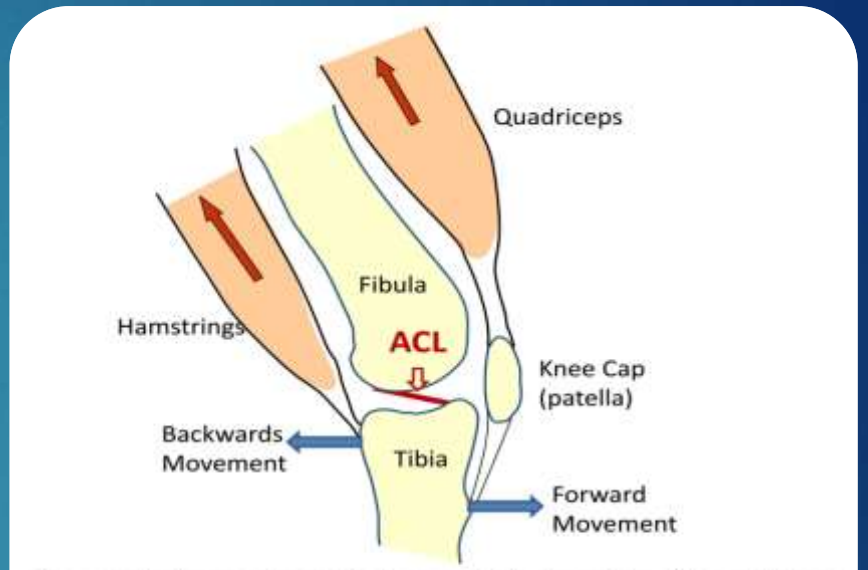
Basic Key Point 78

For normal knee functions hamstrings muscles strength must reach be 55 % to 70% of quadriceps muscles strength



The muscular forces acting on the knee and ACL. Contraction of the quadriceps tends to pull the tibia forward while contraction of the hamstrings tends to pull it backwards. Hamstring activation tends to help stabilize the knee and support the ACL during lading and cutting movements.

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Basic Key Point 79

Patellar mobilization Is helpful to restore knee ROM for patients post ACL reconstruction

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Basic Key Point 80

Kinisiotape application for chondromalicia patients help so much in doing rehabilitation activities with least pain in anterior aspect of the knee

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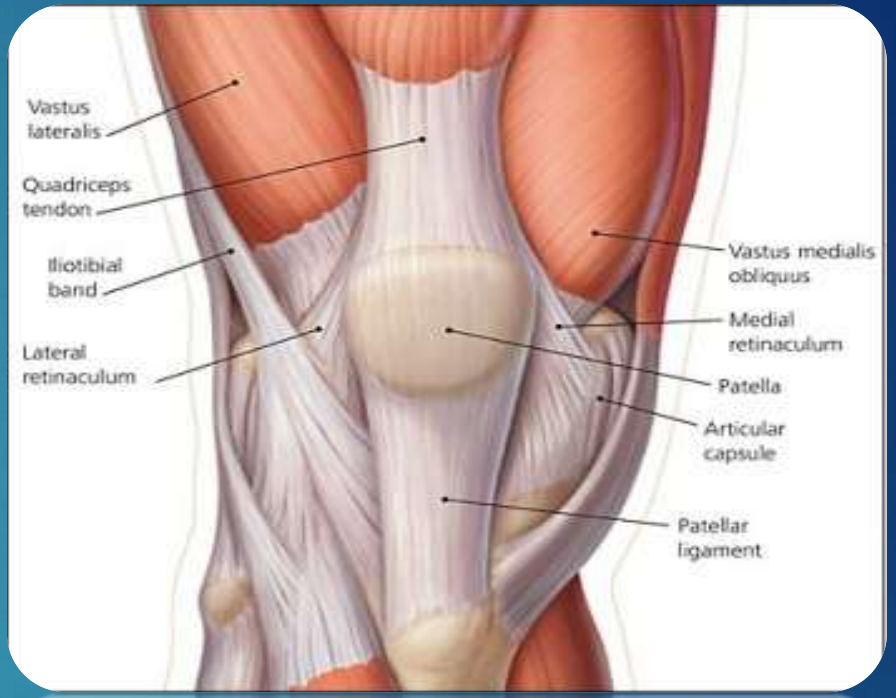
Basic Key Point 81

Not only vastus medialis obliques activation is effective for chondromalacia patellae but also illiotibial band release



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Basic Key Point 82

In post ACL reconstruction patients for full extension ROM Patellar mobilization Knee external rotators training Hamstring and calf muscles stretching exercises Quadriceps especially VMO activation

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Basic Key Point 83

In post ACL reconstruction patients for full flexion ROM Patellar mobilization Knee internal rotation training Illio-psoas and quadriceps stretching exercises Hamstrings and calf muscles activation

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Basic Key Point 84

Patients with knee OA one of his main problems knee stiffness or difficulty in knee flexion which can be managed by activation of tibial medial rotators (knee unlockers) to unlock the knee which is crucial to intiate knee flexion Popliteus muscle, sartoruis muscle ,gracilis muscle and semi tendenosis are the tibial medial rotators

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Basic Key Point 85

In patients post ACL reconstruction Strength the hamstrings muscles until it reach to 55 % - 70% of the quadriceps muscles strength is needed for proper knee functions

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Basic Key Point 86

Patients with hamstrings tightness or over active may be resulting from weakness of gluteus Maximus or uncontrolled anterior pelvic tilting so correct that causes to avoid recurrence of symptoms

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Basic Key Point 87

Patient with flat feet which result from spring ligament weakness Progressive resisted exercises for tibialis anterior and tibialis posterior with using insole is very helpful to support his medial arch and modulating his symptoms

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Basic Key Point 88

Proprioceptive training for those

Who suffer from recurrent ankle sprain is the key for successful rehabilitation and prevention of recurrent ankle sprain

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Basic Key Point 89

Spine consist of 33 vertebrae

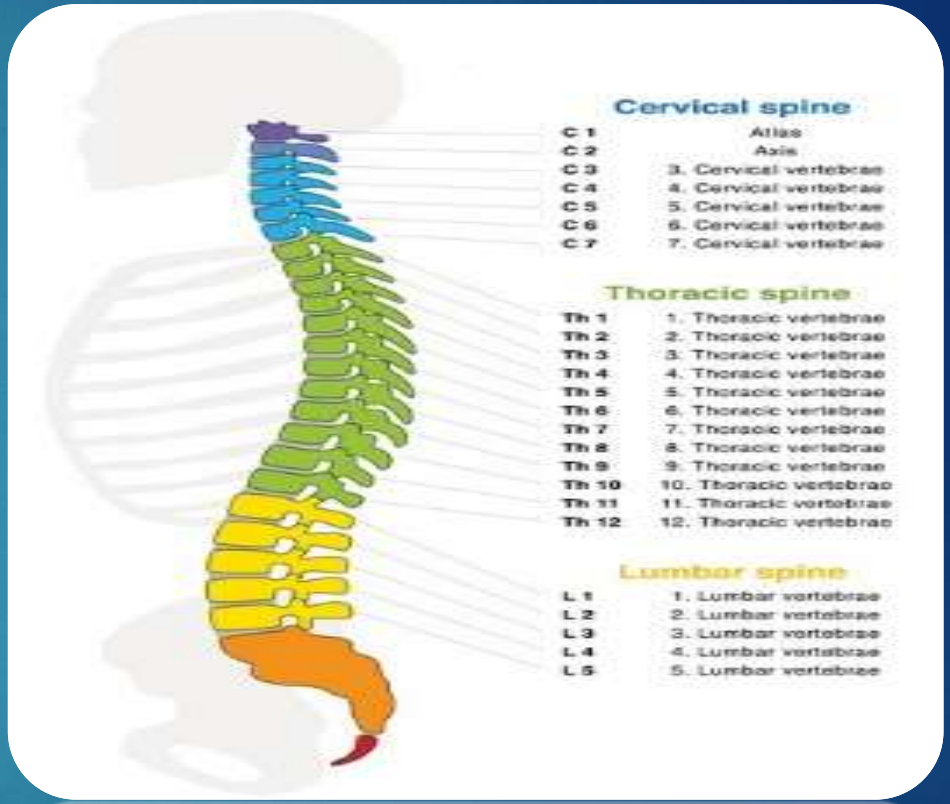
7 cervical spine

12 dorsal spine

5 lumbar spine

5 sacral spine fused into 1vertebrae

4 coccyx spine fused into 1vertebrae



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Basic Key Point 90

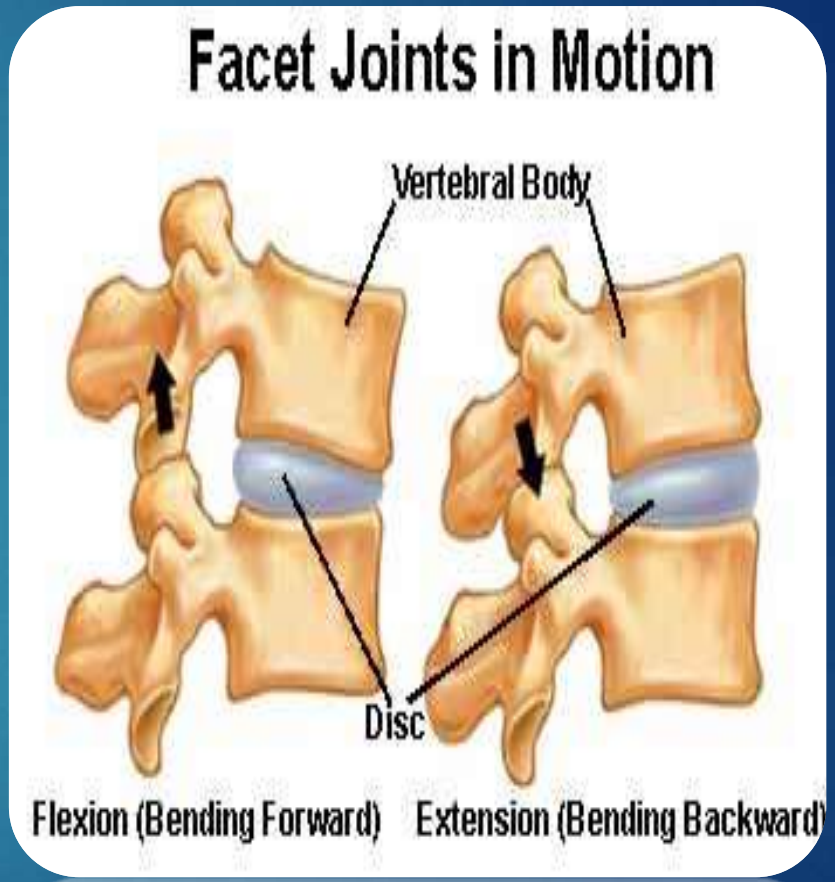
Vertebrae articulate to each other by

Anterior articulation

through intervertebral disc

Posterior articulation

through right and left facet joints



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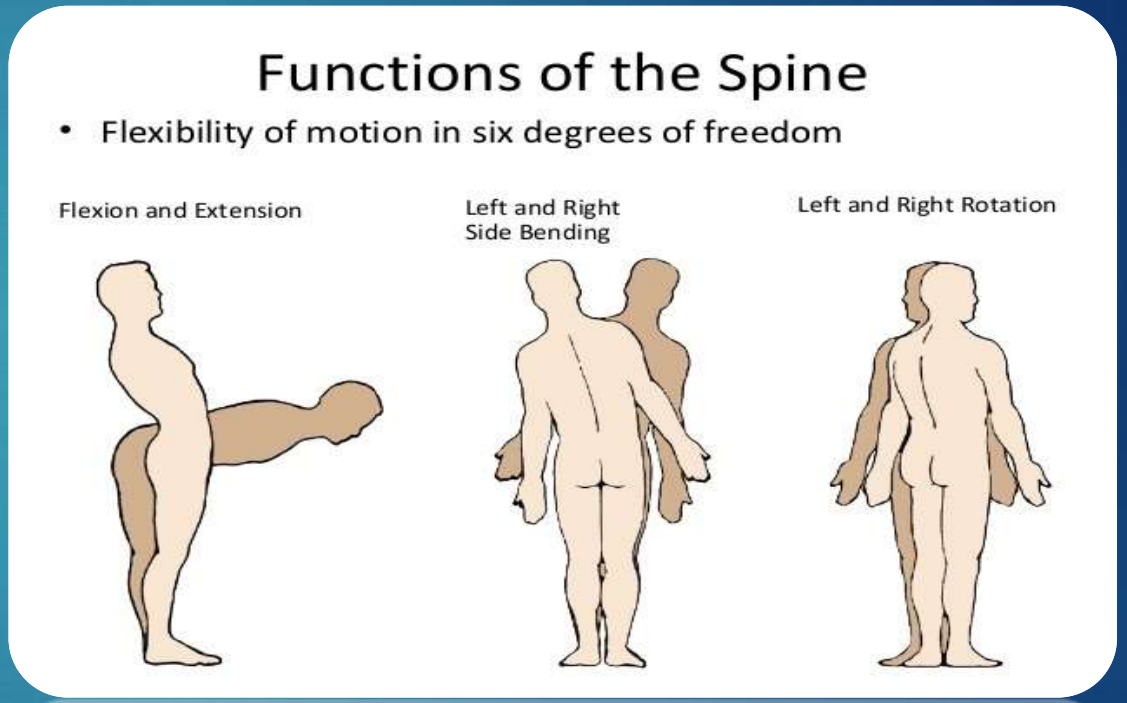
Basic Key Point 91

Spinal movements includes

Flexion – extension

RT and LT Side bending

RT and LT Rotation



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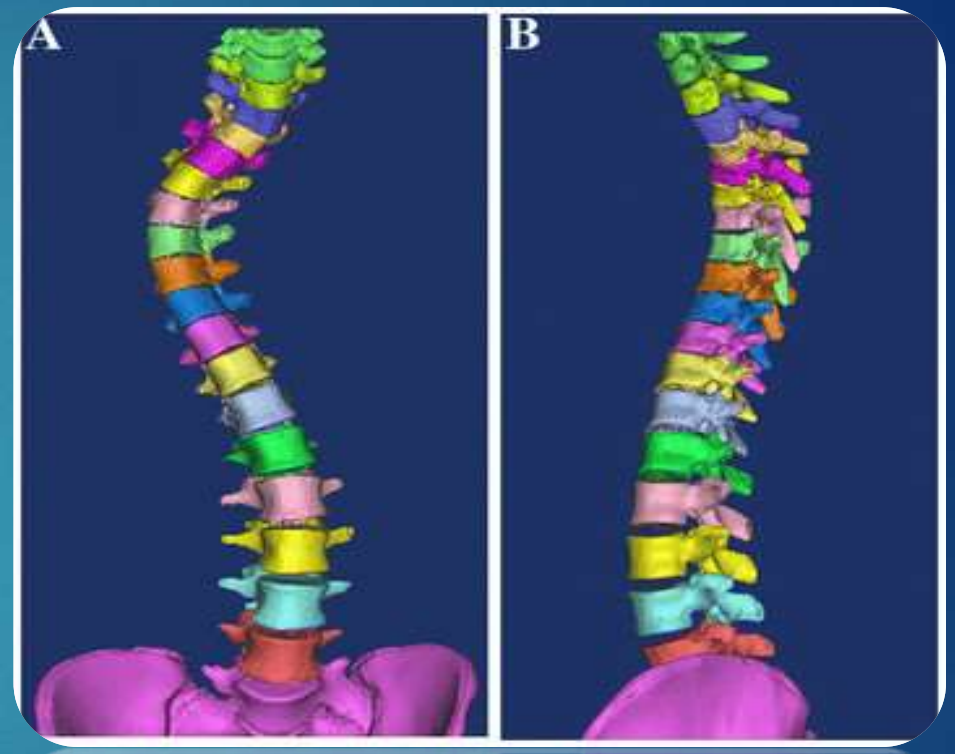
Basic key Point 92

For spinal management we have to consider all spinal movements

What is called 3d correction



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Basic Key Point 93

Mobilization of cervical, dorsal and lumbar spine is the 1st line of treatment for patients suffering from spinal problems with chief complaint pain and muscle spasm in neck or lower back region

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Basic Key Point 94

Spinal decompression is the 1st line of treatment for patients suffering from spinal disc problems with chief complaint radiating pain or numbness either in upper or lower limbs

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ElectroPhysical Agents
Basic Key Points

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Basic Key Point 95

Modalities usage for therapeutic interventions is **parameter dependent** more than modalities it self

It is not a matter of using **electrical stimulation or ultrasound to modulate pain**

it is a matter of what **parameter** you use to **modulate pain**

If you don't know the proper parameter

use **the guided treatment therapy program (GTS)** which is included in most of electrical stimulation or ultrasound machines software

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Basic Key Point 96

Electrical stimulation parameter for Pain modulation

Acute pain

Gate control theory

Sensory level stimulation

Pulse intensity until patient feels tingling sensation (10% less motor level stimulation)

Pulse duration 50-80 microseconds

Duty cycle continuous

Pulse frequency 80-120 hertz

Treatment duration 20-30 min

Immediate effect and last for 30 min to1 hour after treatment

Electrode placement over painful area at least 1 inch between the 2 electrodes

Current name high frequency TENS

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Basic Key Point 97

Electrical stimulation parameter for Pain modulation

Chronic pain

Endogenous opiate theory

Motor level stimulation

Pulse intensity until visible or palpable contraction

Pulse duration 200 -600 microseconds

Duty cycle continuous

Pulse frequency 1-4 hertz

Treatment duration 40-60 min

Late effect 25 to 30 min of application and last 4-5 hour after treatment

Electrode placement over painful area

Current name low frequency TENS

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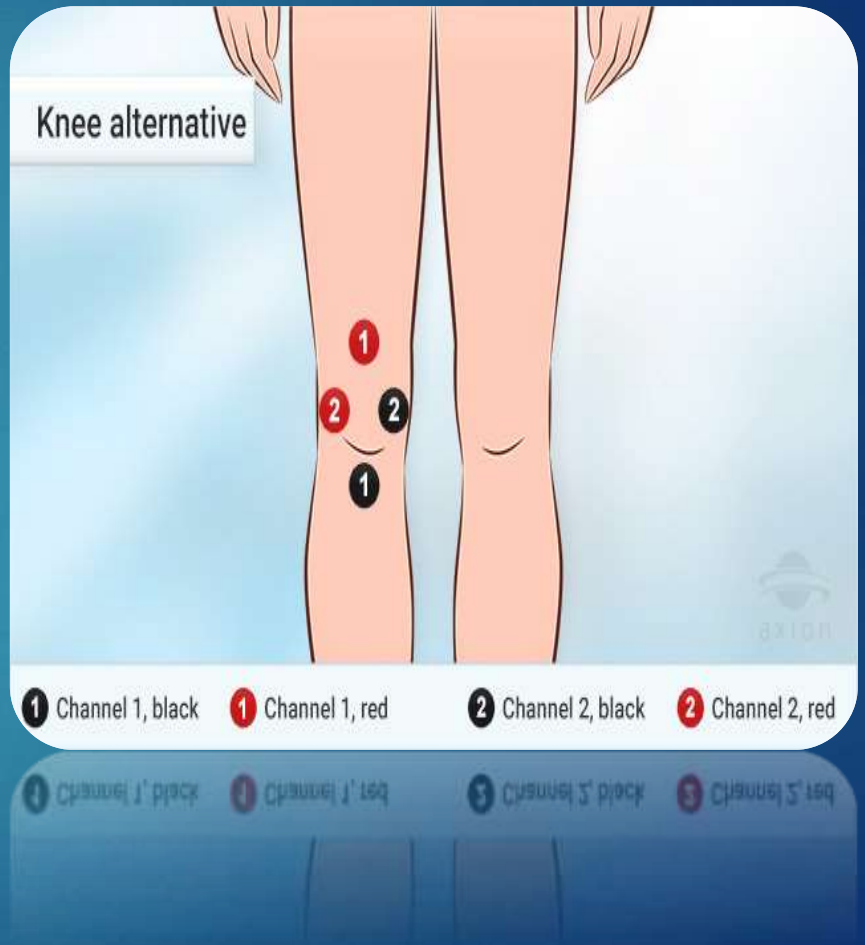
Basic Key Point 98

Electrical current will not penetrate bone so avoid place electrodes around bone like around knee joint (one electrode medial and the other lateral) but use 2 channels one medial and the other lateral



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Basic Key Point 99

Ultrasound parameter like frequency intensity duty cycle and duration should be selected carefully to achieve your goals from ultrasound application

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Basic Key Point 100

Ultrasound parameter

Ultrasound Parameters:	
Frequency	• 1 MHz target tissue depth is 3–5 cm deep • 3 MHz target tissue depth is 2–3 cm deep
Mode	• Continuous to achieve thermal effects • Pulsed to achieve mechanical effects
Beam Nonuniformity Ratio (BNR)	• < 5:1
Intensity = seek athlete's feedback to determine if warmth is perceived for thermal effects vs. mechanical effects	• At 1 w/cm2, 1 MHz US heats muscle at 0.2°C per minute & 3 MHz US heats muscle at 0.6°C per minute • Vigorous heating requires >4°C tissue temperature
Treatment area	• 2–3x effective radiating area (ERA)
Applicator mov't	• Circular pattern 3–4 cm/sec
Duration of heating effect, i.e., stretching window	• Tissue temperature remains elevated for 4–5 minutes • Tissue temperature returns to baseline within 15–18 minutes

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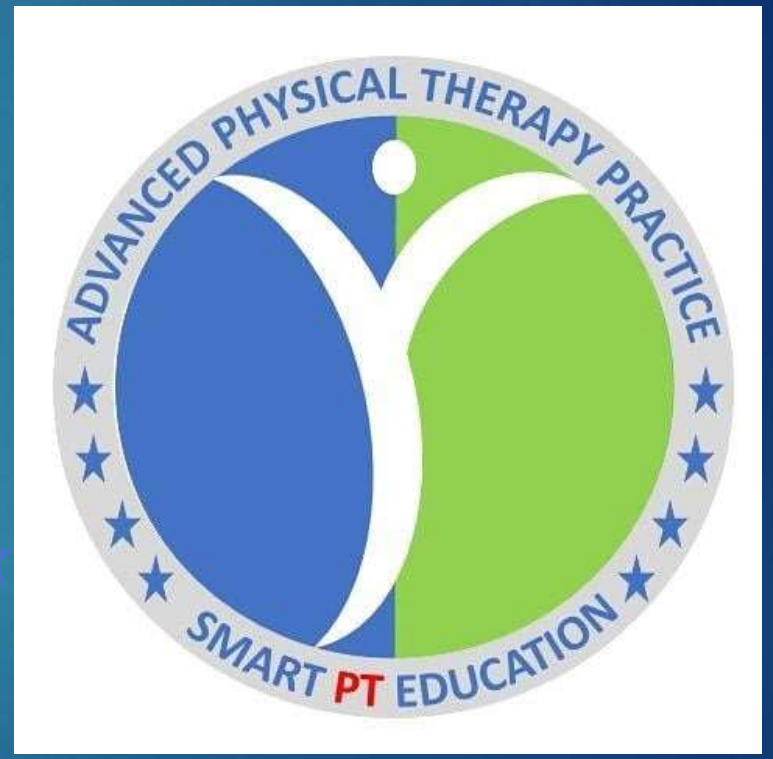

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