

Physio

July

VIVID - 2k17

Volume - 2, Issue - 1

ROCABADO EXERCISES

Helping Build The Perfect Bite

PALLIATIVE PHYSIOTHERAPY

Relieves Suffering, Improves Quality of Life

ACT ON YOUR KNEES

Laying The Matrix

NORDIC WALKING

A Supercharged Fitness Routine

MIRROR NEURON THERAPY

A New Approach in Neuro Rehabilitation

ROTATIONPLASTY

The Ankle Joint Becomes The Knee Joint



Published By,

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Greetings ...

from

Chairman's Desk

It really gladdens me immensely to hear about the release of Physio Vivid 2017 following the great success of Physio vivid 2016. This magazine is an outcome of sincere contributions of the Principal, faculties and all elegant and intelligent students of Physiotherapy.

This magazine exposes its readers with a good knowledge throwing light on the current trends in the field of Physiotherapy. I would like to congratulate each and everyone who had been part and parcel of this vivid to become a reality. This could be a milestone in their path of achievements.

I do strongly believe that education is not just a pursuance of a certain course of study. It means more than a preparation for the life than now is. Indeed a true education has to do a lot with the entire period of existence made possible to mankind. Our SVCOPT-ians would really work on the above principle in yielding a joy of wholehearted service to the world.

I also assure that our students of physiotherapy would definitely excel in their field in a special way delivering their dedicated and committed service which is the greatest need of this hour.

I once again congratulate the Principal and the faculties for gracious extension of their earnest support and priceless and timely guidance in moulding the students to attain such greater heights. My hearty wishes for the upcoming "3rd National Level Conference, Flair -2017" also. Thank you.

**SHRI.B. RAMACHANDRAN,
CHAIRMAN**

Greetings ...



from

***Principal's Desk,
SVCOPT***

It's indeed a great pleasure to release the physio vivid 2017, 2nd annual magazine of our SVCOPT. The upliftment of professional standards are based upon the active sharing of knowledge and developing the habit of continuous learning. I do believe that this magazine will definitely justify it.

I am grateful to our honourable chairman for being our pillar of support in reaching our motto of "creating healthier society".

I wish to congratulate all the students of the editorial board for their earnest participation in bringing up this magazine under the tireless guidance of the physiotherapy faculties especially Mr. Paulraj.

I extend my warm greetings to all the physiotherapy students, alumini, professionals as well as the medical professionals for adding up flavours to this magazine with your informative stuffs. The managers, officers and all non-teaching faculties are humbly remembered for their support. I also thank the sponsors for their enormous contributions.

I am also overwhelmed by my students achievements in curricular and extra curricular activities. My hearty wishes to all my students, alumini for their future to be as colourful as this vivid.

***Prof. A. Pahinian,
Principal, SVCOPT***



Greetings ...

from

***Principal's Desk,
SVMCH & RC***

It gives me immense pleasure to know that our Physiotherapy faculty members and students have prepared the college magazine and it will be released soon on their graduation day celebrations.

The Physiotherapy is very much useful to treat chronic illness and sports injuries as well as to improve the range of movements in joints. The Physiotherapists are competent health professionals, who provided good health care service to the patients. They are concerned with disease prevention, injury management and rehabilitation.

The magazine is providing a platform for the young students to exhibit their talents and to improve their academic activities. The Magazine helps to improve their General Knowledge and it motivates the students in right direction. It induces the healthy competition and co-operation among the students.

I congratulate the entire team of physiotherapy to acquire success in their academic career and bright future thought out their life.

***Dr. S. Ratnasamy,
Principal, SVMCH & RC***

Greetings ...



from
**Medical Superintendent's
Desk**

Congratulating, the Principal, Faculties and Students of Sri Venkateshwaraa College of Physiotherapy for their Unique Magazine "VIVID - 2017" This Magazine is unique by its style and model. It is another feather in their Crown of College of Physiotherapy.

Physiotherapy field occupied and reached Advanced Technology in the field of Medicine, particularly in the field of Orthopaedics. Physiotherapy replaced many Orthopaedic, Cardiothoracic and Neuro surgical procedures. Physiotherapy reduced the economic burden in maintaining public health of the country by reducing the period of hospitalization.

I wish the Principal, Faculties and Students of Sri Venkateshwaraa College of Physiotherapy to achieve Excellent Academic, Cultural and Intellectual Performance.

I thank the Respected Chairman Mr. B. Ramachandiran and the Trust Members for providing this unique Physiotherapy College.

***Prof. Dr. K. Muniappan,
Medical Superintendent***



Greetings ...

from

Vice-Principal's Desk,

SVMCH & RC

It is always a pleasure to be a part of a team which strives to bring out the talents of students and staff.

Sri Venkateshwaraa College Of Physiotherapy Puducherry has always been striving to keep itself ahead of the competition and the results are now for everyone to see.

The college has been good in its progress as it has been actively involved in various activities that have brought to light the hidden talents of the college students and staff. The qualified and dedicated members of staff have always stood shoulder with the management and have carried out their duties with a level of commitment.

This magazine has recorded achievements such as: conferences attended by staff members and students, competitions won by the hugely talented students, innovative projects carried out by students with the guidance of staff, among others.

They stand as a witness to the monumental efforts taken by the management to make the college an excellent one in education and research. I wish the management, staff and students of the college success in their future endeavours.

***Dr. P. Kanagavalli,
Vice-Principal***



Greetings from the ***Editor's Desk***

I am so thrilled to bring our second annual magazine, Physio VIVID' 17!

A thought which has been enduring in the mind becomes real; it gives truly an interesting and exciting experience. This magazine was one such cherished work that had its roots in the persuasion. It would be a snapshot of the various activities and advancements for all associated with physiotherapy.

A lot of effort has been taken for the happening of this volume 2, Physio VIVID' 17. We have made an attempt to bring out the talents concealed within our college. The best thing about this magazine is the representation of our students and faculties creative thinking. This volume is a compilation of articles, puzzles and so on.

I would like to take a moment, to express my gratitude. I humbly thank our beloved CHAIRMAN for the opportunity provided to make this Magazine real. I would like to deliver my heartfelt thanks to our Principal for the belief that he has on me and for the freedom given to work for this magazine. And I also extend my thanks to the co-editor Mr. K. Anand Babu for his valuable support.

From the very bottom of my heart, I thank all the enthusiastic readers. I also incredibly grateful to the entire SVCOPT family for their tireless work to bring-out this publication.

I wish to feast your eyes with our prismatic magazine. Let this "Physio VIVID" flash your mind with the innovatives in the field of physiotherapy.

Cheers,
M. Paul Raj
Editor, VIVID 17

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Flair 16



Graduation Day

Accomplishments

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Palliative Physiotherapy

{Relieves Suffering, Improves Quality of Life}



T. Bharaneedharan PT,
Associate Professor,
SVCOPT



Palliative care is defined by WHO as “an approach that improves the quality of life of patients and their families facing the problem associated with life-threatening illness, through the prevention and relief of suffering by means of early identification and impeccable assessment and treatment of pain and other problems like physical, psychosocial and spiritual”.

Overall rehabilitation can help to maintain or restore function, permit patients to retain mobility and independence, and improve symptoms, to reduce burden on families and caregivers, and for better quality of life. Everyone thinks that palliative care was a ‘terminal care’. Many studies shows that early referral to palliative care rehabilitation seems to be helpful in improving the quality of life for the seriously ill persons and their family.

Now, the scope has recently broadened and the concept of rehabilitation in palliative care is becoming more widespread. As like rehabilitation, palliative care is also a multidimensional approach to meet the physical, emotional, social, and spiritual needs of patients and their families. It seems to be providing specialized therapy for the serious illness/progressive and life limiting illness such as cancer, chronic obstructive pulmonary disease, motor neuron disease and multiple sclerosis.

All members of the interdisciplinary team should work toward common goals, which are dependent on the patient’s preferences and goals of care. Palliative care team is specially trained team of doctors, nurses and other specialists who works together with the patient, and their family for providing a extra care or support needed at every step of the way. The team with patient and family is important in all the stages of illness. Patients can receive the palliative care physiotherapy in a hospice, in a patient’s home, in a hospital or in a community level.

Approximately 52 million people die each year and more than 7 million people with life limiting illness may need palliative care in India every year. The explosion of cancer and AIDS in India has made the requirement of palliative care even more acute. These patients are living everyday with pain which can be relieved, uncontrolled physical symptoms which can be controlled and uncontrolled psychological and social trauma which can be managed. Palliative care in India is still not yet developed as like United Kingdom, United States.

Palliative care in India

It was first started in Trivandrum, Kerala (1986) with the starting of the pain clinic in Regional Cancer Centre of Trivandrum. The first western style of palliative care patient unit was started at Samvedna Ashram (1986) in Mumbai. Kerala is the only state which is offering palliative care services in all the districts and first state which declared its palliative policy in 2008.

Modes of delivery of Palliative care in India:

1. In Patient care units
2. Government regional cancer centers
3. Domiciliary services
4. Combined inpatient and training centers

Role of Physiotherapy in palliative care:

- To reduce the pain by various electrotherapy modalities depending upon their contra-indications
- To reduce oedema by applying soft tissue manipulation and with crepe bandage or anti-embolic stockings to prevent deep vein thrombosis
- To improve bed mobility, strength, balance and transfer activities for bed ridden patients
- To maintain the good respiratory condition
- To prevent muscle atrophy, tightness, or joint contractures
- To re-educate for walking with or without assistive devices
- To provide assistive & adaptive equipment like orthosis and changing the barrier free environment
- To educate for energy conservation / preservation and work simplification techniques
- To reduce the dependence and improve the quality of life
- To educate about the condition, prognosis of the diseases for the patient and the care givers.
- Providing the continuous care at home or community level also.

Palliative care in SVMCH & RC & Puducherry

• Palliative care in SVMCH & RC was launched on November 2015 with collaboration of Trivandram Institute of Palliative Sciences, Kerala. Palliative care unit was re-scheduled with new team members at December 2016. Our hospital running the palliative care unit with the good team work for helping the poor patients admitted for the care. Physiotherapy plays an important role in relieving pain and care for bedridden patients.

• Puducherry Cancer Trust Hospice & Research Centre was also running the palliative care for the terminally ill patients.

Physician’s add years to life and the physiotherapists add life to years.

APOSTHERAPY

- The Theory of Evolving Therapy



K. Anand Babu MPT

How AposTherapy works

The AposTherapy Biomechanical device works to retrain muscles around the knee by adjusting the center of pressure as you walk. By changing the foot's point of contact with the ground, the device shifts the line of force closer to the center of the knee. By restoring alignment and improving gait patterns.

A personally adjusted **Biomechanical system** which releases pressure from your painful joint and introduces controlled micro-instability to re-educate your muscles. AposTherapy instils correct patterns of motion as you walk, which enables effective motor learning. By combining correct body alignment with micro-instability

Apos Therapy blends into the patient's everyday life, for around an hour a day, making treatment easy to comply with for the best results. Treatment aligns the body and re-educates the muscles with minimal interruption to daily life and maximum rehabilitation.



AposTherapy is an innovative, personalised, non-surgical and drug-free programme for knee and back pain, based on a foot-worn Biomechanical device which is individually calibrated. AposTherapy is clinically proven to deliver long term pain relief and to improve function, mobility and quality of life.



AposTherapy process

Firstly, by adjusting the foot's point of contact with the ground (the centre of pressure), the biomechanical system changes the forces acting on the various joints of the lower limb and low back. When calibrating the system, the AposTherapist considers which specific structures need to be supported or offloaded, in order to provide the patient with symptom relief. This decision is based upon the findings from the **clinical interview, physical assessment and computerised gait-lab**, as well as the **pain, function and quality of life questionnaire scores**.

The second rehabilitation principle is the introduction of **micro-instability through perturbation** during the entire gait cycle (and any other weight bearing activity). This refines the control of the central nervous system with every movement the patient performs. Again, the introduction of appropriate perturbation for the patient is done at the system's calibration stage.

The unique therapeutic effects of the biomechanical system are achieved with two convex pods, called **Pertupodcaps** (pods which provide perturbation), inserted under the main weight bearing areas of the foot - heel and forefoot. The AposTherapist adjusts the Pertupod caps in every possible direction (anterior, posterior medial and lateral), as well as adapting their height and resilience.

The appropriate level of perturbation is introduced by selecting the convexity level of the Pertupod caps. This is determined by a number of factors including **the patient's age, overall condition, proprioceptive abilities and neuromuscular control**. The goal is to challenge the patient in a manner which is barely perceptible, so that perturbation, creating micro-instability, can be controlled throughout the multiple movement repetitions performed as part of daily routine.

Every biomechanical system is **personally calibrated** to suit the individual patient and their unique therapeutic needs. The device's rehabilitative elements are all concentrated on the base of the device, with the most visible part of the device, the shoe, having no therapeutic role.

The calibration process must be achieved in conjunction with the patient. After personally adjusting the device in accordance with all the relevant parameters, the AposTherapist then asks the patient to walk with the device. The patient's gait is closely examined, in order to observe any changes in movement patterns, with relation to the patient's symptoms and clinical findings. The system's calibration is then refined and the patient asked to walk with the system for a second time, while his gait and symptoms are assessed once again. This process is repeated until both the patient and AposTherapist are satisfied that the ideal calibration has been achieved to produce optimal therapy outcomes.



Biochemical Injection

is Not the Solution for

Biomechanical Problem.....



UP & DOWN TAPE FOR ACCESSORY NAVICULAR SYNDROME:

G. Premkumari, Assistant Professor, SVCOPT



Accessory navicular syndrome otherwise called as prehallux tibiale or externum navicular secundum. It is an accessory bone of the foot that occasionally develops abnormally causing plantar medial enlargement of the navicular. It is an sesamoid bone present in the posterior tibial tendon.

It has been estimated that 4-24% of population of the people affected by this syndrome. It is caused by trauma, ankle sprain, chronic irritation from shoes or footwear rubbing against extra bone, excessive activity or overuse leads to prehallux. It is more common in young female with the age group o 10-20 years of age complaining with mid foot/arch pain along with difficulty in wearing foot wear.

It may be associated with tendinitis of tibialis foot tendon along with tightness of the tendo achilles in long standing cases. Examination is by differentiation of navicular prominence in flat foot Deformity by inverting everting through subtalar joint with thumb over bony prominence recognition of loss of structural integrity of the longitudinal arch will not be corrected by surgical treatment taping may be useful in ANS.

Most commonly used treatment is prolotherapy which strengthens the ligaments, tendons and muscle. It is an injection technique that supports the body's normal healing response to injury.

Symptoms

- Pain or ache in medial arch
- Bony prominence on medial foot
- Redness or swelling over medial arch
- Difficulty in wearing foot wear
- Pain in arch foot that increasing during after activity
- Development of flat foot
- Symptoms may not develop until adulthood



If you have Accessory Navicular Syndrome as diagnosed by X-ray, prescribe the treatment option of taping along with strengthening exercises.

Navicular up and down tape for accessory navicular syndrome:

2 lengths of strapping tape length approx. 2/3 of circumference of foot center length of 1/2 strip over naviculus, distal edge along N-C joint line, lift tape firm "UP" Dorsally, avoid tape interfering with talocrural joint line Tape should go past midline of sole, avoid extending tape onto cuboid or base of 5th metatarsal add 2nd 1/2 strip centered over cuneiform with proximal edge along N-C joint line while holding naviculus "UP" while pulling on the tape firmly "DOWN"





T. Padmapriya, MPT(ortho),
Assistant Professor,
SVCOPT.

ACT on your knees

Laying The Matrix

Articular cartilage is a specialized connective tissue. It provides a smooth, lubricated surface for articulation and to facilitate the transmission of loads with a low friction. It has a limited capacity for intrinsic healing and repair. Most musculoskeletal morbidity is due to injury to articular cartilage. It can be damaged due to prolong wear and tear. It is composed of dense ECM (Extracellular matrix) with highly specialized cells called chondrocytes. The cartilage of knee joint is most commonly affected articular cartilage. This damage if left untreated may lead to degenerative conditions.

Autologous Chondrocyte Transplantation or Implantation (ACT or ACI) is a recent, advanced procedure to treat isolated full thickness articular cartilage defects of the knee. It provides pain relief and slows down the progression of the damage, regaining mobility and return to work.

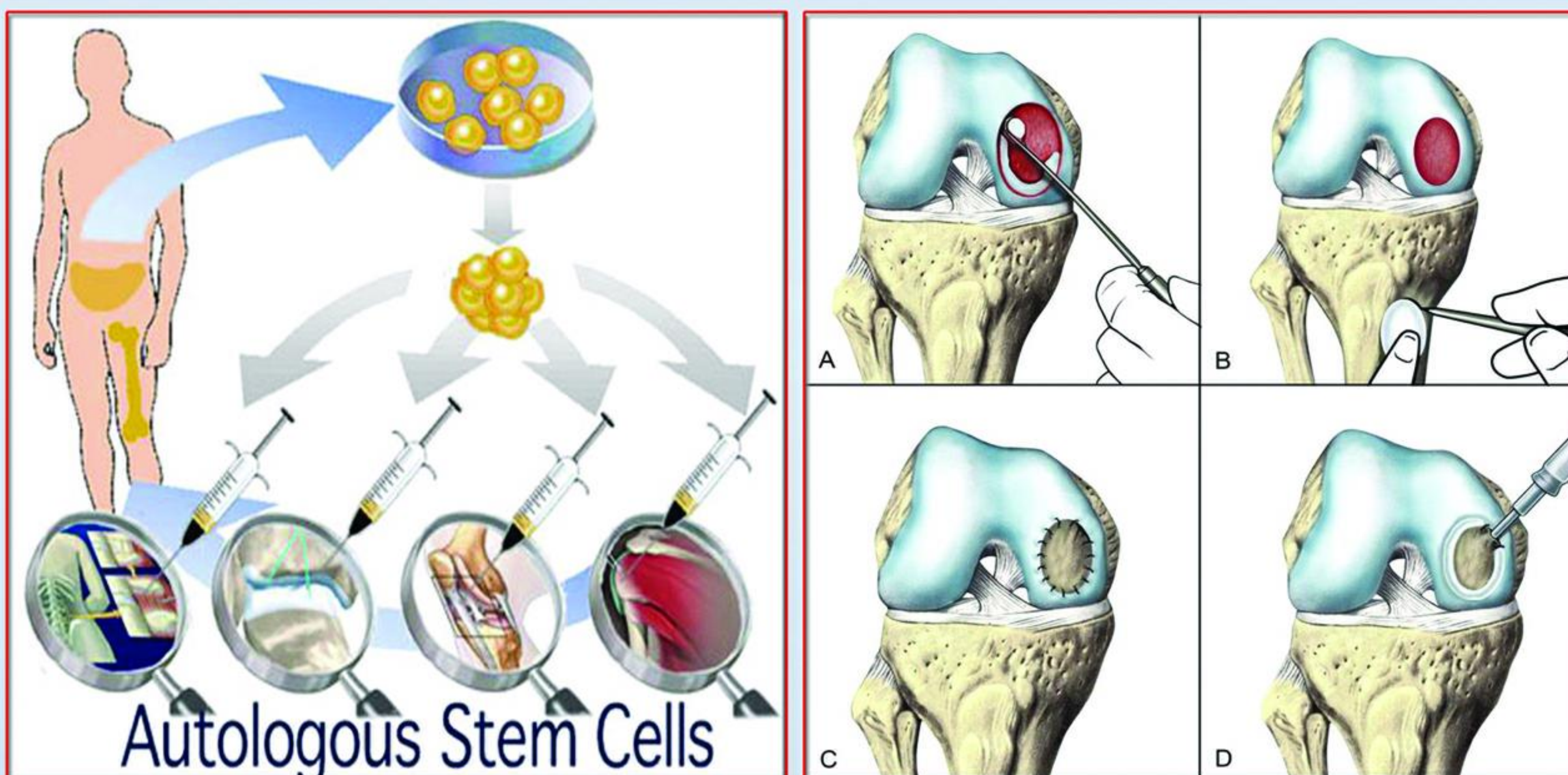
Procedure:

Stage 1. Arthroscopic surgery is done in the knee to view the damage and small chip of cartilage is removed from the less weight-bearing area, the intercondylar notch or the superior ridge of medial and lateral condyles of femur of the patient.

Stage 2. The matrix is treated enzymatically and the chondrocyte is isolated. These cells are grown in vitro for 4 to 6 weeks till enormous cells are present.

Stage 3. The new chondrocytes are reimplanted in the damaged area through open knee surgery.

These autologous cells should adapt to the new environment to form new cartilages, after surgery 8 weeks period of restricted weight bearing is advised.



Role of physiotherapy in ACI:

*During non-weight bearing (6 to 8 weeks)

- Isometric knee exercise to regain muscle tone and prevent atrophy.
- Range of motion exercises within the restricted range to prevent adhesion formation.
- Strengthening exercises for quadriceps and hamstring muscles.
- Continuous passive motion (CPM) to improve the graft success.

*Gait training during 9 to 12 weeks after surgery. Depending on the recovery the patient may return to normal activities of daily living.

*ACI has become more widespread and most developed articular cartilage repair technique with 85% of success rate. It also seems to provide long term results.



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PRRT: Lost Slice in the Mystery of Pain Found

- M. Paul Raj, Assistant Professor, SVCOPT

Having muscle tension and tightness is common but not normal if your nervous system is balanced and functioning properly. Muscles should be supple when not being used. They should not be tender to the touch, even with deep palpation.

A new pain regardless of the cause and pain or limitations you have had for months or years can be exhausting. As unbelievable as it sounds, patients receiving physical therapy and its advancement.

Long lasting pain relief is accomplished by applying highly skilled, hands on techniques called Primal Reflex Release Techniques (PRRT) and Associated Awareness Technique (AAT). PRRT and AAT are both specialized, relaxing therapies that quickly break the pain cycle. Typically, 50% resolution of pain is expected and frequently found by the end of the first session. These techniques involve several different types of touch such as tapping and flicking often far from the painful region.

John Jams, MAPT, San Diego, CA developed Primal Reflex Release Technique (PRRT). Jams has developed a systematic approach based on sound scientific and anatomical principles gleaned from nearly four decades of research and treating patients. PRRT is a quick and effective method to evaluate how one's nervous system is regulating muscle pain and tension throughout the body. When the nervous system is out of balance, it can cause anything from tightness to severe pain, including back pain or headaches.

The Theory behind PRRT

The basic tenet of PRRT is that all painful experiences are controlled by a central source that biases the periphery. This challenges the old paradigm that there is a peripheral origin and treatment of painful conditions (PRRT does not discount or deny the peripheral origin and treatment of pain but only offers another theory to explain why the old way does not always work).

According to John Jams, P.T., the primal reflexes such as the startle reflex, the withdrawal reflex and the protective joint reflexes are at the root of all sustained painful conditions. These reflexes are hardwired into the nervous system initially for the purpose of survival and/or the preservation of life. Therefore, when someone is in pain or is encountering a painful or startling experience, these reflexes are called upon to protect the body, stimulating a "fight or flight" response. These reflexes can be sustained in the state of hyper readiness described by John Jams, P.T. as being up regulated. This up regulation of the primal reflexes leads to patterns of pain that can be reproduced, duplicated and maintained.

The primal reflexes are linked to the "fight or flight" response and also associated with the human condition called stress. The AMA states that 80% of all illness and disease are associated with stress. Through this connection, John Jams, PT. has developed a powerful new tool to treat a myriad of related medical conditions. This gives the physical therapist a very powerful new tool to both assess and treat clients. The effect that PRRT can potentially have on physical therapy and the medical profession could be profound.

PRRT is a paradigm shift on many levels. First of all, it challenges the scientific theory of pain and its treatment. Secondly, it is already changing the thought patterns, behaviors and attitudes to those few willing physical therapists utilizing this technology. Thirdly, it does not negate other paradigms, it only adds to them. Finally, it has the potential of having a far-reaching effect across all of medicine.

How does PRRT work?

Usually treatment incorporates isometric holding of a muscle or tapping over a muscle of a certain tendon to elicit a certain reflex. It is a very gentle, non-forceful technique designed to influence learning in the nervous system. The goal is to try to encourage the nervous system to become engaged in the process of participating in the correction. PRRT allows the body to make corrections itself thereby making the corrections lasting. Results are amazing. There is an immediate difference in muscle tension, muscle pain, and ease of movement.

Conclusion:

Currently, PRRT is being developed and practiced. The acceptance of this paradigm is the next step. Therefore, we are currently "in the shift". PRRT will have an effect on scientific theory in the approach to the treatment of pain, rehabilitation, and the role of physical therapy in health care. As PRRT is accepted and adopted by the community, it will radically change the evaluation and treatment of painful medical disorders, as well as improve patient outcomes. Physical therapists should begin to ready themselves and start the process of embracing, studying, and using this technique to propel themselves into the next phase of development of health care delivery. Physical Therapy has the opportunity to lead the change.

EXTRACORPOREAL MAGNETIC INNERVATION

A New Solution For Urinary Stress Incontinence:

B Simulia Dhinju PT, Assistant Professor, SVCOPT



Hello all! I am Simulia, I just wished to share about one of the convenient form of treatment for urinary incontinence. Recently i gotta treat a 23 years old male with the complaint of stress UI followed by spinal surgery. At that stage the choice of treatment was to stimulate the weak pelvic floor muscles. When we decided to engage him with electrical stimulation that young man denied. There were few reasons behind his denial but the main reason was the fear of exposing the treatment area. So I was in a search of an alternate treatment which could sort out such issue and came across with the idea of ExMI.

URINARY INCOTINENCE :

It is a multifactorial syndrome commonly defined as involuntary leakage of urine or a co-morbid condition that impair normal micturition.

TYPES OF URINARY INCOTINENCE:

- A. Overflow incontinence:** The bladder overfills without causing the sensation of the need to urinate.
- B. Stress incontinence:** Characterized by the leakage of urine during physical activities that increase pressure on the bladder.
- C. Mixed incontinence:** A combination of urge and stress incontinence.
- D. Functional incontinence:** Patient is unable to reach the bathroom because of chronic physical or mental impairment.

TREATMENT OF UI :

Depending upon the type of UI treatment varies. The commonly used treatment are as follows:.

- A. Pharmacological interventions
- B. Neuromodulation
- C. Botulinum Toxin
- D. Urethral Bulking Agents
- E. Reconstructive Surgery
- F. Physiotherapy:** *Behavioral strategies: Pelvic floor strengthening exercises. (eg: kegel's exercises etc) *Bladder training program (e.g : scheduled voiding etc) *Electrical stimulation *ExMI: recent form of treatment.

EXTRACORPOREAL MAGNETIC INNERVATION (EXMI) is otherwise called as extracorporeal magnetic stimulation [EMS] which is the preferred treatment form for Urinary incontinence. In this therapy it involves the use of pulsed magnetic stimulation of the sacral nerves / pudendal nerves. There by rehabilitating the pelvic floor musculature to reduce urinary incontinence.

PRINCIPLE OF STIMULATION: Stimulation is based on Faraday's law of magnetic induction, which states that an electric current will flow in a conducting medium as a response to a pulsating magnetic field. EMS induces controlled depolarization of neurons that innervate pelvic floor muscles, which causes the formation of action potentials that facilitate contraction of the corresponding muscle.

MECHANISM OF STIMULATION: ExMI uses a magnetic chair to stimulate contraction of pelvic floor muscles and sacralnerve roots. Stimulation was provided by an electromagnetic generator underneath the seat controlled by an external unit. During the treatment, patients were instructed to sit on the chair fully clothed in order to position the perineum at the center of the coil and were informed that they would feel anal-sphincter contraction during stimulation. A focused, time-varying magnetic field penetrates into the perineum and activates the motor neurons of the pelvic floor muscles. The pelvic muscles contract and relax with each magnetic pulse, thereby strengthening the muscles.



Duration of treatment: 20 to 30 minutes, twice a week for about 8-weeks

[Note: Alternatively continuous treatment may be conducted at home using a small EMS device, which is inserted into specially designed undergarments].

Advantages:

- Painless. • Non – invasive. •Frequency of treatment is relatively short (twice a week is enough)
- Convenient form of electrical therapy (Treatment part need not to be exposed that is more acceptable to patients suffering from urinary incontinence).

Note: The effects of ExMI were also reported to be equivalent to that of electrical stimulation.

Transient Side effects: Long-term safety data from randomized, controlled trials is scarce. Current evidence suggests that magnetic stimulation is safe, with no or only few transient side effects such as Leg pain, Abdominal pain, Cystitis, Bowel symptoms, Backache, Tingling sensation, Perineal pain & Neck pain. It could also exacerbate preexisting lumbar ischialgia.

Systems & Technologies: EMS devices include the Neo Control ® Pelvic Floor Therapy System (Neotonus Inc., now defunct; Magstimm ® Rapid (Magstim Co. Ltd.), BioCon-2000® (Mcube Technology), and Magther Incontinence Therapy System (EMD Medical Inc. So far it has not been used in india.

“Let us make use of new technologies for better results” 7

WASH BOARD SYNDROME

- Snapping Scapula



S. Latha,
Tutor, SVCOPT

Wash Board Syndrome is otherwise called as Snapping Scapula Syndrome is a controversial condition attributed to bony and soft tissue abnormalities. Boinet in 1867 was the first surgeon to describe scapula thoracic crepitus. Later Mauclaire identified 3 sub classes: (a) Froissement- the physiologic friction sound, (b) Frotting- louder grating sound, (c) Craquement – loud snapping sound. It is commonly occur in young, active individuals who perform repetitive overhead movements and also its common for sports person like weight lifting, swimming or baseball.

Snapping of the deep surface of the scapula may be painful or painless. It is the consequence of bony alterations, or inflamed soft tissues such as bursae. The less-protected superior, medial and inferior aspect of the scapula are more affected by soft tissue abnormalities, such as muscle insertion avulsion which can produce spur scar formation, and inflamed thickened, painful bursa, which can result from forceful repetitive stresses between the anterior surface of the scapula and the underlying musculature and rib cage. Scapular dyskinesis may aggravate both of these conditions aggravating clinical presentation.

S.No	Phases	Goal	Treatment
1.	Acute (0-3 weeks)	Reduce pain	Closed kinematic chain exercises.
2.	Recovery (3-8 weeks)	Gain scapular control and shoulder motion. Promote correct posture and spinal movement.	Multi-planar closed kinematic chain exercises. Open kinematic chain exercises. (Restore trapezius muscle balance) Core strength endurance training. Stretch and strengthen opposing musculature. Thoracic spinal mobilization.
3.	Maintenance (6-10)	Gain functional strength and sport or Job specific strength.	Plyometric training. Multi-planar, functional open kinematic chain exercises.

Causes for Snapping Scapula:

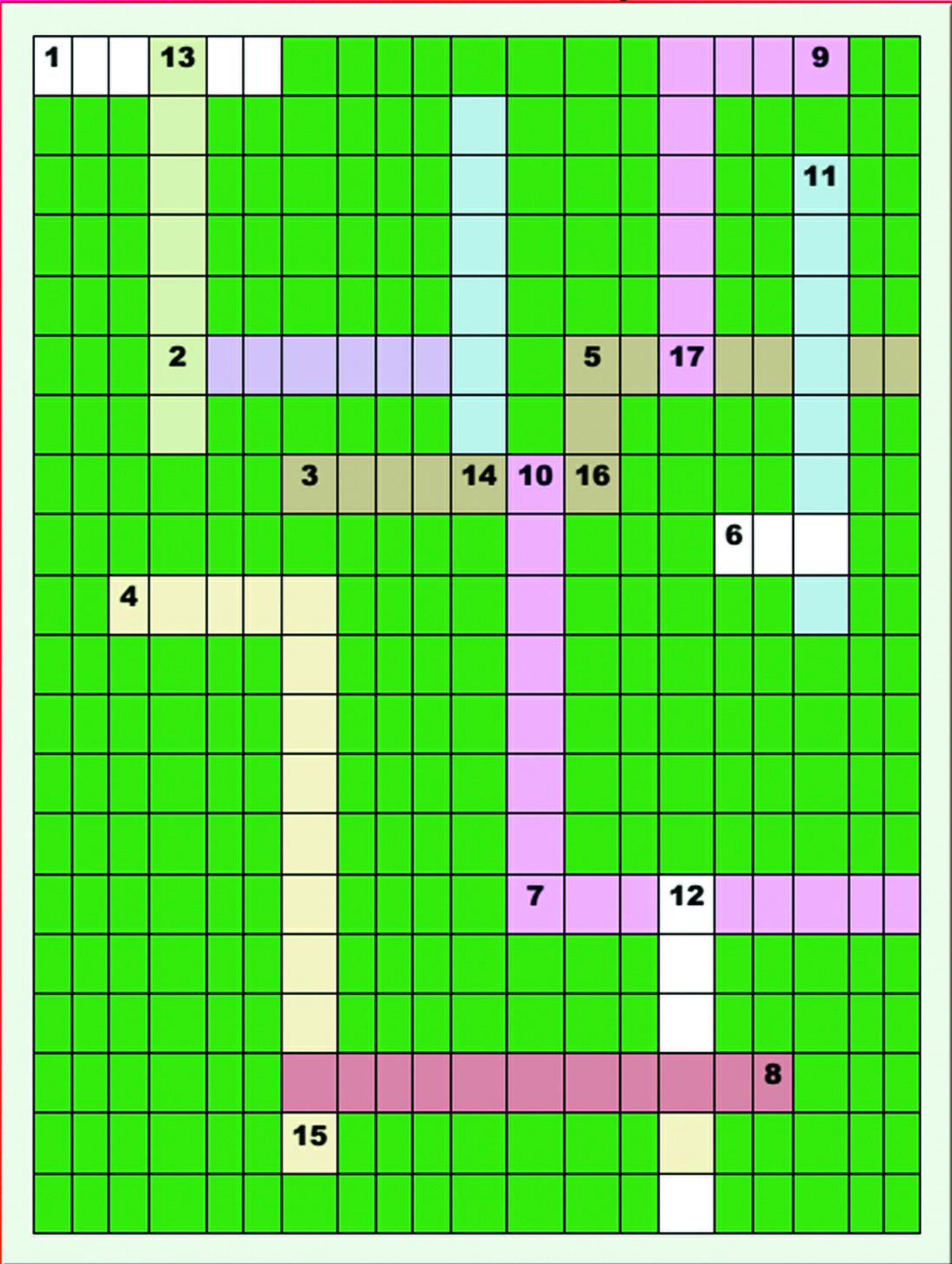
- => Soft tissue abnormality: leading to increased curvature of the superomedial angle of the scapula.
- => Luschka tubercle: a hook-shaped prominence at the superomedial angle of the scapula.
- => Osteochondroma: the most prevalent benign tumor of the scapula.
- => Skeletal abnormalities including exostoses or other osseous tumors.
- => Scapular dyskinesis or loss of dynamic control of scapular motion.

Physical therapy:

- ==> Goal of rehabilitation mainly focuses on postural issues, improving muscular strength, endurance, and balance.
- ==> Kibler and Mc Mullen introduced the concept of a kinetic chain system. This system identified three stages of rehabilitation: Acute, Recovery and Maintenance Phases of Rehabilitation.

PUZZLE NO. 1

For Answer See Page No: 39



- Up to down**
- 10. Most frequently occurring emotional disorder of children ...
 - 11. Medial meniscus tear is more common than lateral meniscus because of it decreased.....
 - 12. Injury to muscle are known as tear or
 - 13. Pathogenic sign of traumatic fracture

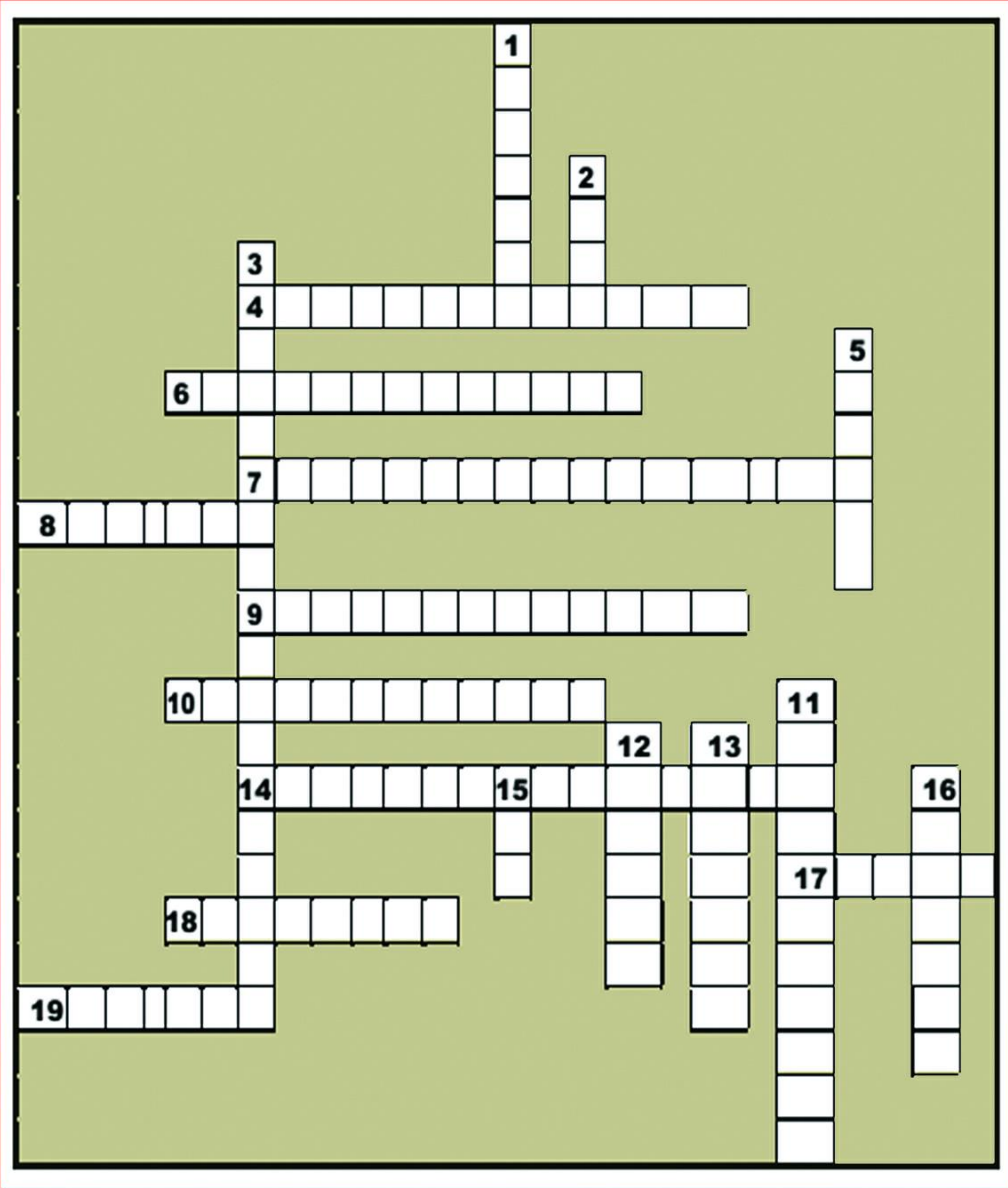
- Down to up**
- 14. Fetal growth is maximally affected by
 - 15. Menisci calcification is a feature of
 - 16. short for gymnasium
 - 17. Which carpel bone is fracture causes median nerve involvement?

- Left to right**
- 1. Wind swept deformity is seen in
 - 2. Sprengel's shoulder is due to deformity in
 - 3. Which of the following is an exercise for back ?
A) Arching b)bicep cure c)calf raise
 - 4. Madelung's deformity involves
 - 5. In inter-trochanteric fracture has most common complications of
 - 6. The lower rate of ultrasound absorption occurs in
 - 7. If the MRI correctly identifies 95%of patients as positive for anterior cruciate ligament tears, then MRI is

- Right to left**
- 8. Earliest sign of rickets is
 - 9. Myositis ossificans is commonly seen at joint

PUZZLE NO. 2

For Answer See Page No: 39



- Across**
- 4. Injuries in children can be caused by this factor
 - 6. The sport or activity of lifting barbells or other heavy weights
 - 7. The process that allows the body to maintain its temperature
 - 8. A condition resulting from lack of iron in the blood
 - 9. Rugby, football, basketball, are Sports
 - 10. Loss of bone density (brittle bone)
 - 14. Restricting food as an individual view's themselves as being overweight
 - 17. Obesity levels are increasing the incidence of this type of diabetes
 - 18. One of the most popular Olympic sports, with events in butterfly, backstroke, freestyle etc. It is a great form of all-round exercise
 - 19. One of the simplest ways to get active and stay active

- Down**
- 1. This mineral is well-known for its key role in bone health
 - 2. Mineral needed for the formation of red blood cells that carry oxygen to working muscles
 - 3. A type of training can enhance muscle power
 - 5. Exercise to sculpt waist line and improve posture
 - 11. This can happen when the heart muscle is starved of oxygen-rich blood and causes damage
 - 12. Exercises used in the aim of improving sports agility, which is the ability to change direction and accelerate while in motion
 - 13. Lumbago causes pain in____
 - 15. One of the unmodifiable factor which decreases the flxexibility__
 - 16. Repetitive stress placed on a body part _____

MIND YOUR WORDS.

~ Words that harm. Words that Heal.



G.U. KRISHNA CHANDAR PT,
Tutor, SVCOPT

Education plays an important role in the care we provide as physiotherapist. "Your report shows that you have a back of 80 years old at 40", "Your discs are popped out and crushing your nerves", "Your knee joint is so bad that you should stop doing all the activities" these kind of conversations between a patient and physiotherapist are not uncommon. These kinds of conversations are well intended to make our patients aware of the problem, might be misinterpreted. The language that we use might become a hindrance to the recovery of our patients. See the image below.

Information that elicits negative emotions about the illness will cause catastrophizing (ie. View a situation as considerably worse than it actually is) which will increase the pain related fear, leading to the avoidance of recovery behaviour and pain. This cycle continues unless it is interrupted.

Fear avoidance beliefs - the belief that an activity may result in (re)injury or increased pain.

These beliefs can either be of these two

- **'damage beliefs'** - believing that painful activity could cause damage to his/her spine.
- **'suffering/functional loss beliefs'** - believing that painful activity will impact on suffering and/or subsequent function.



If a patient with low back pain believes that if he moves, his disc might damage and increases his pain will be apprehensive of any or all movements. And all their normal activities will be reduced or becomes a tedious process, as they have to be very careful and protect their fragile back.

The words, the metaphors, the language that we use to communicate should be carefully chosen. The right language, not only help the recovery of the patient but also helps to build a better relationship. Healing language provides the stage for collaborative decision making between the physiotherapist and the patient, with each of them sharing his or her "own expertise to help the patient make the best possible decision."



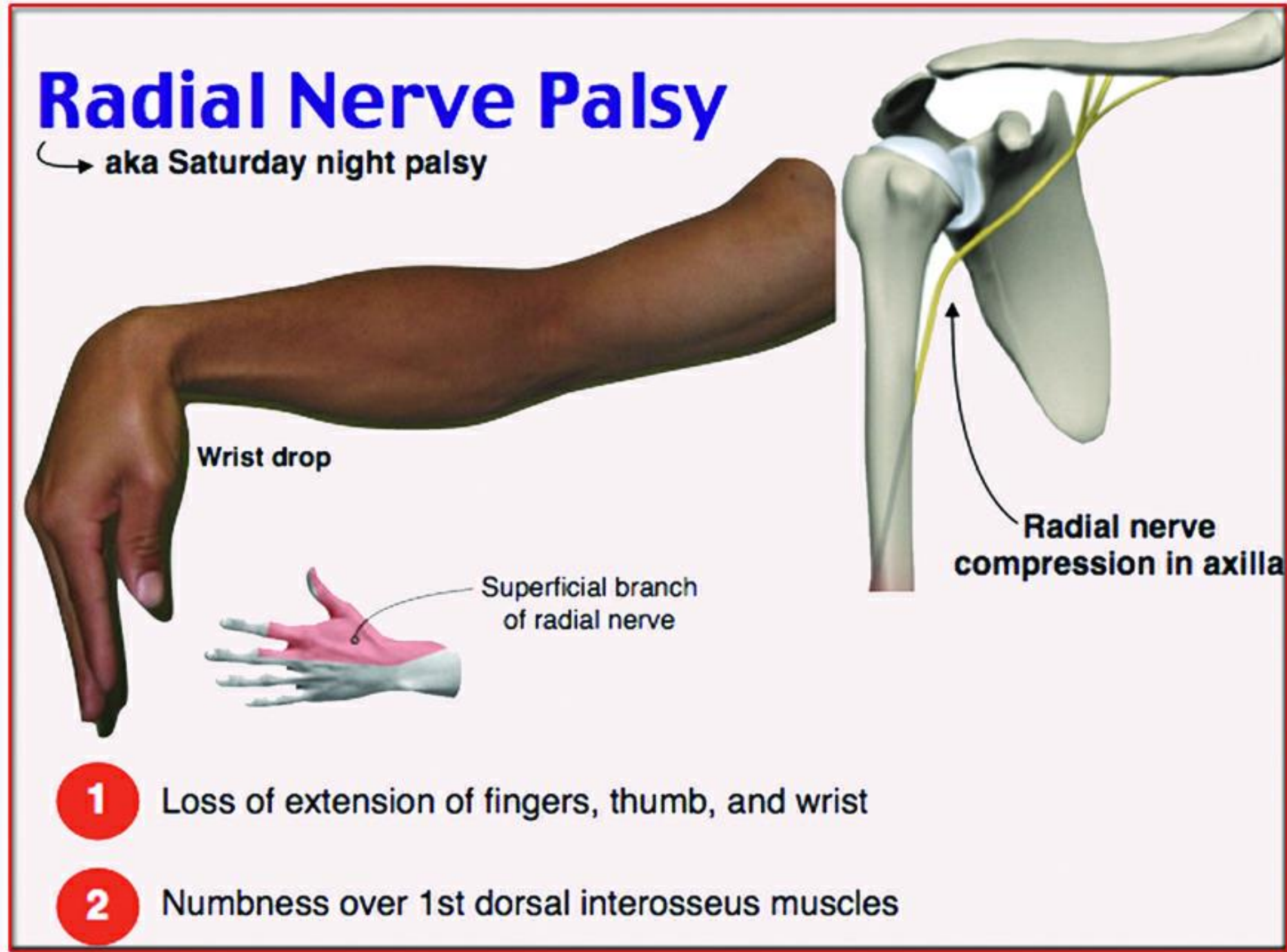
Vlaeyen JW, Linton SJ. Fear-avoidance and its consequences in chronic musculoskeletal pain: a state of the art. Pain. 2000 Apr 1;85(3):317-32.

REHABILITATION OF THE JONES TRIPLE TENDON TRANSFER

A Case Report

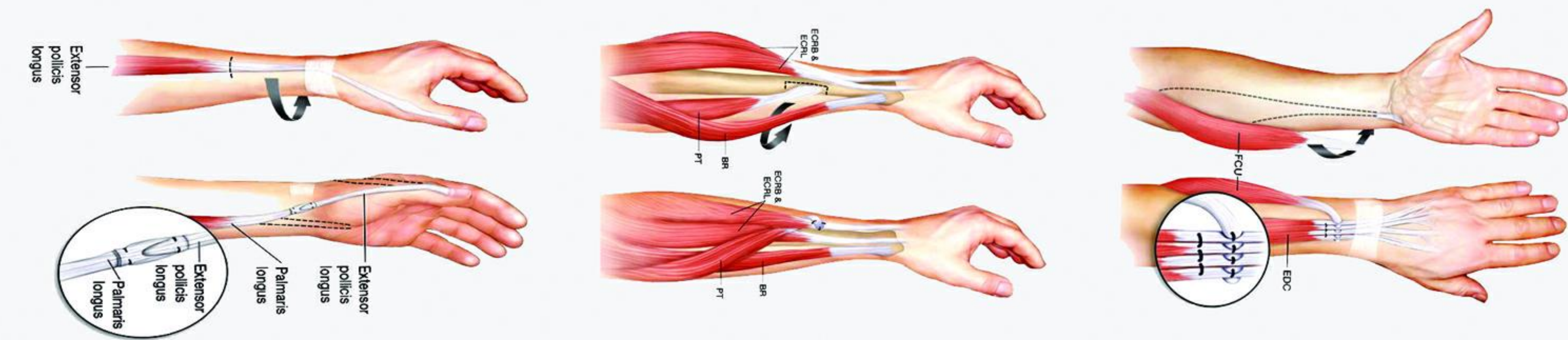


S.Ramkumar,
Tutor, SVCOPT



A case of 24 years old male had a high velocity trauma at Chennai, he was admitted in Chennai GH who was diagnosed as fracture shaft of radius right side, for which ORIF with plate and screws fixations done at GH. Following the surgery patient developed wrist drop on the right side. Since one and half years followed by the surgery, there was no improvement seen in the patient. With the above mentioned complaints, that patient was admitted in our Hospital, Department of Orthopaedics SVMCH, Pondicherry, from the Orthopedics Department patient was referred to Physiotherapy Department. In Our Department complete evaluation of the patient current condition was done.

Our examination reveals that he had complete loss of power on his right supinator and wrist extensor and there is a visible muscle wasting seen on his forearm also sensory loss is marked on dorsum of the hand and posterior forearm. Hence we concluded that he is a case of radial nerve injury (wrist drop).



In our Physiotherapy Department, we given electrical stimulation for 10 days to extensor group of forearm muscles, but we couldn't able to get any progression.

Then he was opted for the "JONES TRIPLE TENDON TRANSFER" by Orthopedics surgeons.

On examination after tendon transfer patient limb attitude was shoulder adducted, elbow flexed, forearm pronated, wrist extended, thumb adducted, MCP joints flexed and IP joints are neutral position. Wrist extensor muscle power was 1/5.

Following the surgery, Physiotherapy was done as per the following protocol.

0-2 weeks	Post-operative splint applied (Above elbow splint with position of elbow flexion, wrist extension, MCP flexion, IP joints relaxed) shoulder and IP joints movement started.
2-4 weeks	Thermoplastic splint was fabricated and used.
At the 4 th week	Post-operative muscle power assessment was done. Muscle power of wrist extensors, finger extensors and thumb extensors were 2/5.
4-6 weeks	Mobilization of single joints (tension off the transfer tendons)
6-8 weeks	Activation of transferred tendons • Microcurrent (It delivery tiny electrical impulses) • Visual feedback (Motor imagery based mental practice) • Somato-sensory re-education training.
At the 8 th week	Motor and Sensory assessment was done. Muscle power of wrist, finger and thumb extensors was 3+/5. Sensory was intact.
8-10 weeks	Splint weaned off Strengthening exercises started



After 10th week patient successfully achieved wrist, finger and thumb extension movements. Muscle power near to normal 4+/5. Sensory also normal, and patient can able to do all basic function of hand such as grasp, side pinch, hook and hand writing.

OS TRIGONUM SYNDROME

- A Physiotherapy Perspective

WHAT IS TRIGONUM SYNDROME?

Os trigonum syndrome is secondary ossification centers develop age of between 7-13 years old. Usually, the ossicle fuses to the talus, forming the poster lateral process of the talus or steida's process. However, the os trigonum is present when nonunion occurs.

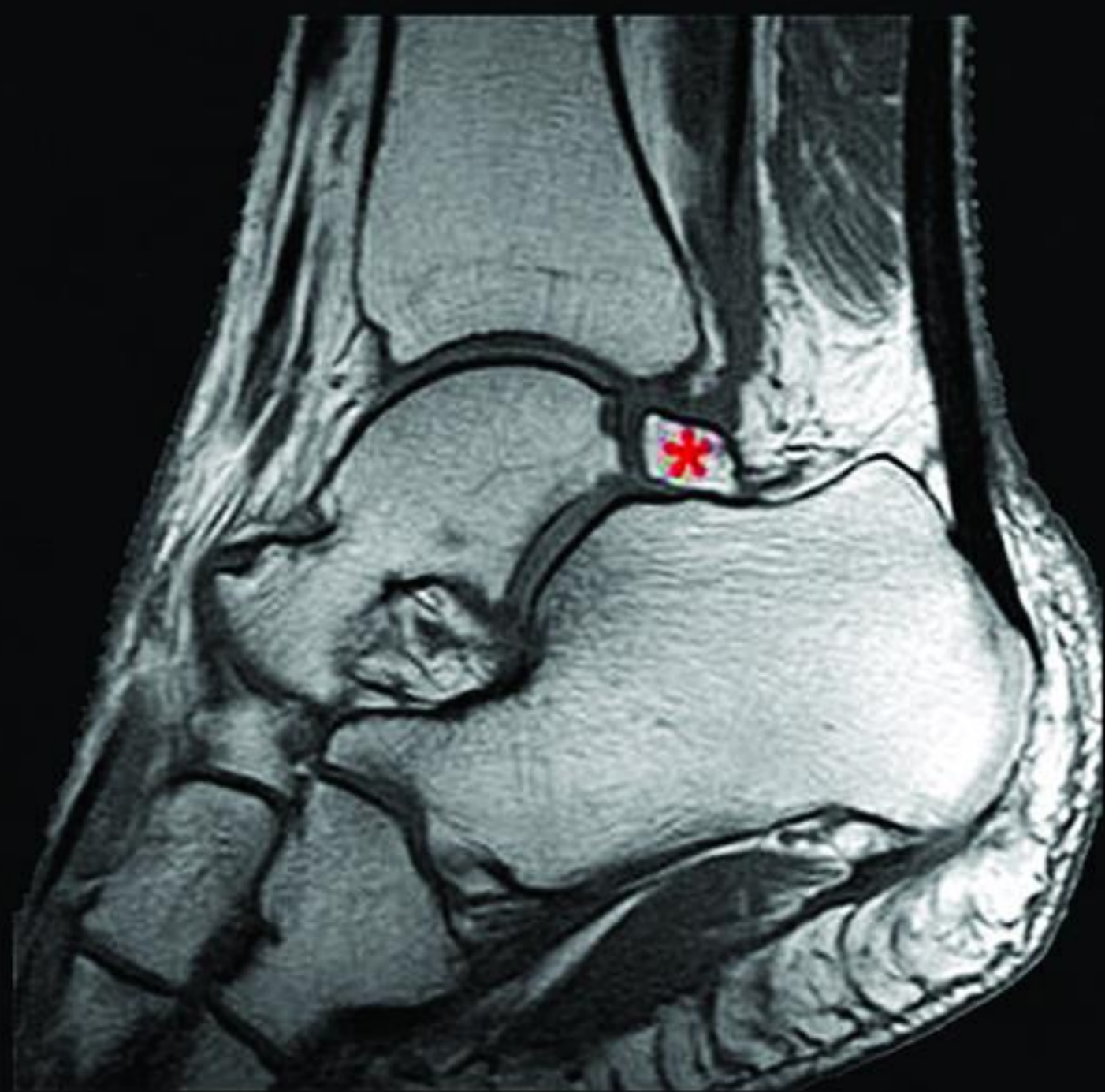
Os trigonum syndrome occurs due to repetitive, forceful plantar flexion (or painting). This commonly affects dancers especially those assuming the extreme plantar flexed position that pointe work requires.

Athletes may also experience os trigonum syndrome due to push off maneuvers (i.e. kicking, downhill running and jumping)

BIOMECHANICAL CHANGES:

This syndrome is more common in dancers because of the frequency with which they stand either on pointe or demipointe. The pain is felt at the back of the ankle when the toe is pointed and is due to the presence of a bony prominence behind the ankle that compresses the soft tissues. The posterior impingement syndrome most commonly develops in ballet dancers who have either an os trigonum or Steida's process. The os trigonum can be present congenitally or be the result of repeated talar impingement against the posterior tibia or an acute fracture of the posterior talar tubercle during forced plantar flexion. The pain that results is from crowding of the soft tissue, and an enlarged posterior tubercle can cause just as much pain as an os trigonum.

Biomechanical evaluation may reveal tenderness behind the ankle joint and pain with forcible passive plantar flexion of the dancer's foot (this would not cause any pain in dancers with



SYMPTOMS:

- Pain on the outside of ankle, between Achilles and the lateral ankle bone
- Swelling in ankle and/or foot
- Tenderness on outside of ankle
- Increased pain with forced pointing (plantarflexion) and wearing high heels
- Posterior ankle pain radiating into the medial arch due to flexor hallucis longus tenosynovitis

Physiotherapy Management

Therapeutic Exercise

- Intrinsic Strengthening:
 - Doming
 - Marble pick-ups
 - Foam roller
- Weight shift releves
- Theraband releves
- 2 to 1 eccentric releves
- Theraband ankle exercises
- Calf stretches
- Plyometrics

Neuro Re-education

- Gait Training
- Skeletal Alignment Exercise
- BAPS board
- Pilates Reformer footwork
- Pilates leg springs series (for proximal control)
- Pilates jump board
- Static balance activities:
 - On compliant surfaces such as Dyna Disc, slant board, pillow, etc.
 - Progression to single limb, with reaching, on releve, and other external perturbations

Modalities

- Phonophoresis
- Cryotherapy
- Electrical Stimulation

Manual Therapy

- Edema mobilization
- Joint mobilization (midfoot/ankle)
- Soft tissue mobilization
- Trigger point release

M.Vijaya Rangan PT
Tutor, SVCOPT





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INVERSION THERAPY

Makes your life upside down.....

What is inversion therapy?

Inversion therapy is a technique where you are suspended upside down to stretch the spine and relieve back pain. It is a natural form of gravity assisted traction. The theory is that by shifting the body's gravity, pressure eases off the back while also providing traction for the spine. It is a form of spinal decompression. For any disc compression pathologies traction is a better form of treatment. In inversion therapy the amount of traction applied to various locations of spine is exactly the right amount. When inverted the weight normally applied is just the right weight to apply traction.

How it works?

There are inversion tables and chairs available, which are designed to provide the angle of inversion. Because the angle of inversion also affects the length of inversion time.

The shallower the angle, the longer the time. Most people will invert for 5-15 minutes once or twice a day. Beginners should start at a mild angle (approximately 20-30 degrees beyond horizontal) for the first few weeks.

20 - 30 degrees: At this angle, your body begins to experience mild stretching to your muscles and joints, while benefiting from stimulated circulation, improved oxygen flow to the head, and repositioning of internal organs.

60 degrees (parallel with the rear legs of the table):

This is the angle to which the average person experiences virtually all the benefits of inversion.

90 degrees (full inversion):

In full inversion, your body hangs freely to be able to perform inverted exercises

Inversion Benefits

• IMPROVE FITNESS AND BUILD CORE STRENGTH

Inverted exercises help build a strong core, which is essential to back health

• RELIEVE BACK PAIN

Relaxes muscles, rehydrates discs, realigns & reduces pressure

• GENERAL REDUCTION OF PARASPINAL EMG ACTIVITY

• INCREASE FLEXIBILITY

Improves functional fitness for an active, healthy lifestyle

• IMPROVE JOINT HEALTH

Decompresses, strengthens & enhances shock absorption

• EASE STRESS

Releases tension in shoulders, neck & back

Indications for Inversion therapy

- chronic lower back pain
- scoliosis
- poor circulation
- sciatica

Contraindications for inversion therapy

- | | |
|-----------------------------------|------------------------|
| ❑ Use of anticoagulant drugs | ❑ Hypertension |
| ❑ Heart and circulatory disorders | ❑ Middle ear infection |
| ❑ Osteoporosis | ❑ Pregnancy |
| ❑ Recent fractures | ❑ Spinal injuries |
| ❑ Skeletal implants | ❑ Glaucoma |
| ❑ Conjunctivitis | |



R.RADHIKA
MPT 2nd Year



What is SMI technique?

The suboccipital muscle inhibition (SMI) technique is a method of relaxing the tension in the four muscles located between the occiput and axis, which regulates the upper cervical vertebra (rectus capitis posterior major, rectus capitis posterior minor, obliquus capitis inferior, and obliquus capitis superior); these muscles are known to be associated with regulating body posture as well as rotation of the head. When the tone of suboccipital muscles falls, it has been reported that the tone of knee flexors such as the hamstrings also decreases due to relaxation of the myofascia. This is because the hamstrings and suboccipital muscles are connected by one neural system, which passes through the duramater; this is called the superficial back line.

The SMI technique is a method of inducing relaxation of the fascia by applying soft pressure to the suboccipital area of the patient while the patient is lying comfortably, and it can be easily applied by a therapist.

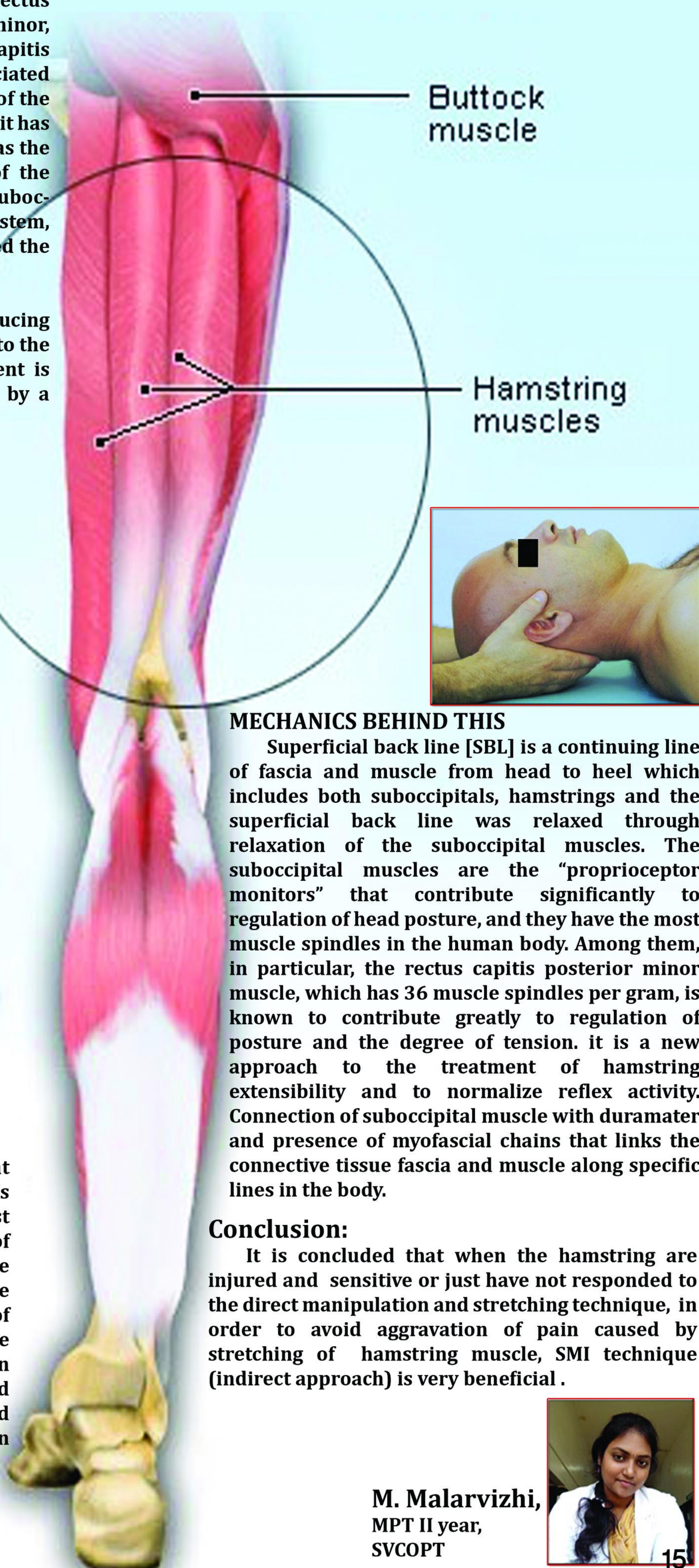


Technique application

Patient in supine lying, therapist should sit at the head of the table and place the palms of hands under the subjects head, pads of the therapist fingers on the projection of the posterior arch of the atlas. The therapist then locates (with the middle and ring fingers of both hands) the space between occipital condyles and spinal process of 2nd cervical vertebra. Then MCP joint in 90 degree of flexion, therapist rest the base of the skull on hands. Then exert pressure upward and toward the therapist. The pressure should be maintained for 2 minutes until tissue relaxation has been achieved.

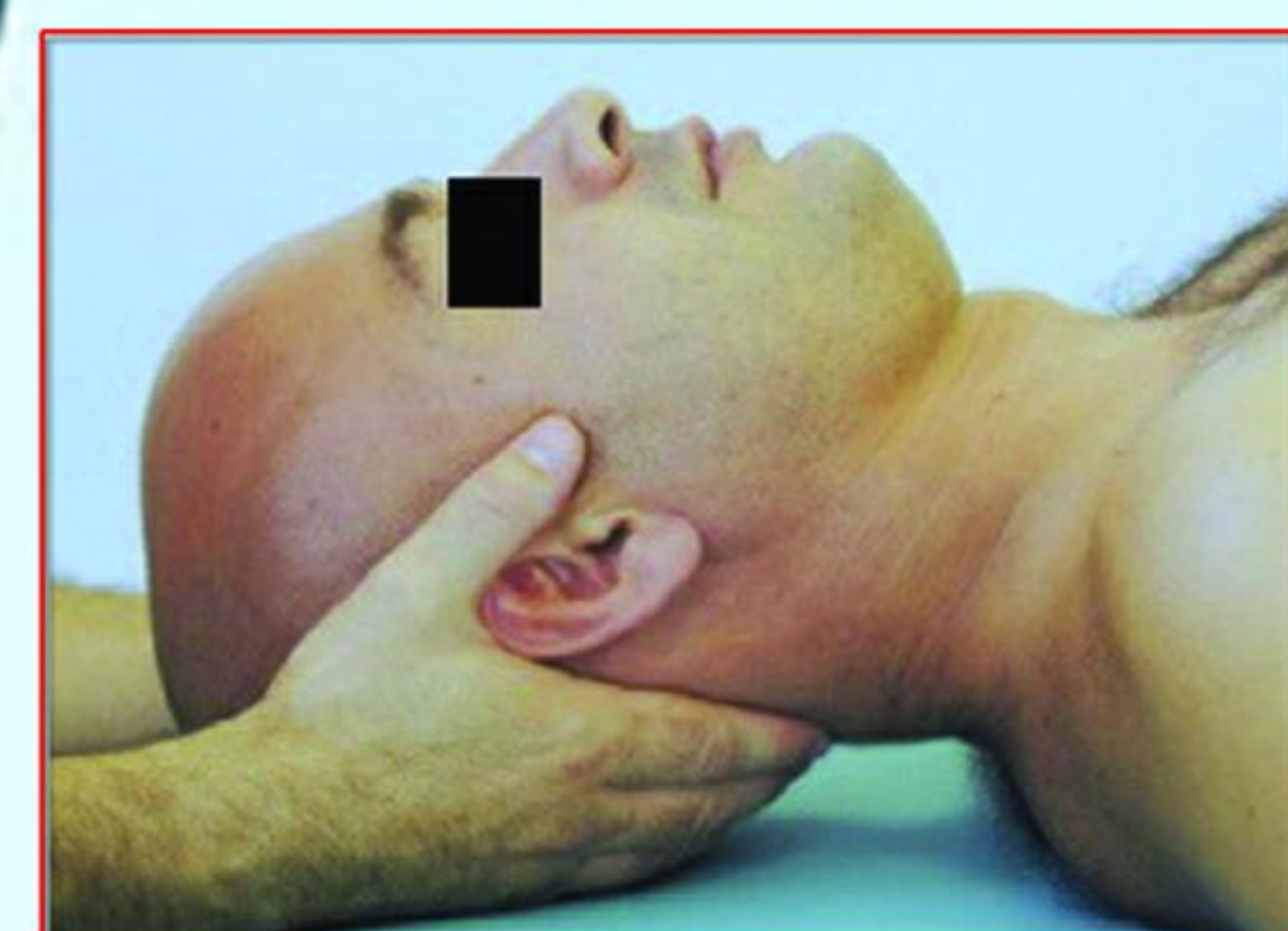
Do you have hamstring tightness?

Suboccipital Muscle Inhibition (SMI) Technique Helps You!



Buttock muscle

Hamstring muscles



MECHANICS BEHIND THIS

Superficial back line [SBL] is a continuing line of fascia and muscle from head to heel which includes both suboccipitals, hamstrings and the superficial back line was relaxed through relaxation of the suboccipital muscles. The suboccipital muscles are the “proprioceptor monitors” that contribute significantly to regulation of head posture, and they have the most muscle spindles in the human body. Among them, in particular, the rectus capitis posterior minor muscle, which has 36 muscle spindles per gram, is known to contribute greatly to regulation of posture and the degree of tension. it is a new approach to the treatment of hamstring extensibility and to normalize reflex activity. Connection of suboccipital muscle with duramater and presence of myofascial chains that links the connective tissue fascia and muscle along specific lines in the body.

Conclusion:

It is concluded that when the hamstring are injured and sensitive or just have not responded to the direct manipulation and stretching technique, in order to avoid aggravation of pain caused by stretching of hamstring muscle, SMI technique (indirect approach) is very beneficial .

M. Malarvizhi,
MPT II year,
SVCOPT



Virtual reality typically refers to the use of interactive simulations created with computer hardware and software to present users with the opportunity to engage in environments that appear similar to real-world objects and events (Weiss et al.2004).



D.Dhanalakshmi,
MPT 1st year,
SVCOPT

Virtual reality rehabilitation :

Depending on input and display devices, VR systems can be divided into Fully immersive system and Non-immersive setups. The advantage of fully immersive systems is the user's strong "sense of presence" which has been attributed to the convergence of the system's multisensory input. In non-immersive systems, the VR system often consists of a computer monitor, mouse, keyboard and possibly joysticks, haptic devices and force sensors. The multi-sensory illusion of actually being in the virtual environment can motivate patients to continue training over multiple therapy sessions.

VR systems are often comprised of a multitude of technologies, software and hardware devices. Most of these devices are unfamiliar to patients and therapists. Hence, the fields of human-machine-interaction/human-computer-interaction are of critical importance in the use of VR technology in rehabilitation settings. The most prevalent sensory stimulations in VR systems are found in visual, auditory and haptic (tactile) modalities.

Visual feedback is traditionally provided by computer screens, large screen projection, wall projectors ("CAVEs"—Cave Automatic Virtual Environments, where the virtual environment is projected on a concave surface), and head-mounted displays (HMDs). HMDs are head-worn display units consisting of one small display for each eye, earphones and often a head-tracking unit. Acoustic feedback in mono or stereosound can be provided by speakers, headphones or other more sophisticated sound systems. Haptic feedback is less common but extremely important for specific applications. It can be provided by robotic actuators or haptic gloves that vibrate against the skin or within the device.

Input devices are important for each VR system to provide the user with intuitive ways to control events within virtual environments. Examples of marker-based motion capturing and tracking systems (e.g. OptiTrack), transhumeral amputee controlling a virtual hand through pattern recognition of their myoelectric activity recorded on the surface of the subject's stump.

Advantages of VR Rehabilitation:

Advantages of VR rehabilitation applications is focused on a few important aspects relevant to motor learning. Motor rehabilitation should be focused on functional movements in a relevant environment with high intensity, a large number of repetitions and appropriate feedback (Timmermans et al. 2009).

Repetition is important to promote motor learning and cortical plasticity. The learning process must be reinforced by feedback which links the patient's performance to a successful task outcome. Lastly, motivation is needed to repetitively carry these tasks out over an extended period of time. VR technology is believed to provide all of these critical components to provide an engaging and relevant task environment that can be tailored to the needs of the patient (Henderson et al. 2007).

Virtual Feedback in Rehabilitation:

Feedback can be very important for the user's motivation. The user always needs to know when and why a task was completed (un)successfully in order to promote (errorless) learning and prevent frustration. Most computer applications and VR systems present the user with visual and auditory information.

Conclusion:

Mainstream VR systems for neuro-rehabilitation will only become a reality when all elements of a therapeutic system are adaptable to the user's specific goals while still being affordable for widespread use in clinics and patient homes.

Virtual Reality Rehabilitation Beyond Gaming

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A NEW LIFE AFTER LIFE

- ROLE OF PHYSIO IN BREAST CANCER SURVIVAL



INTRODUCTION:

There is a growing evidence base reporting the physiological and psychological benefits of physiotherapy as a safe and effective adjunct to breast cancer treatment. Services ideally will be able to deliver physiotherapy interventions to better empower patients in the management of their symptoms, side-effects of treatment or recovery from surgery.

Recent specialist breast care physiotherapy services are now being developed so that physiotherapists are prepared to deliver a high standard of care through such initiatives.

INTERVENTION DURING BREAST CANCER

Safety: 13 RCTs summarised that exercise was safe during breast cancer and does not contribute to worsening of lymphedema.

Aerobic fitness: All ten RCTs showed substantial improvement in aerobic capacity with intervention ranging from home based walking to supervised fitness sessions included resistance and flexibility.

Muscular Strength: All 5 RCTs showed statistically substantial improvement on muscle strength.



INTERVENTION AFTER CHEMOTHERAPY

Safety: 15 RCTs advocated exercise after breast cancer however there was general consensus that physiotherapist should be aware of exercise prescription particularly with arms and shoulders in breast cancer.

Aerobic fitness: 10 studies using exercise interventions using timed walk test and maximal oxygen uptake showed statistical significance in aerobic capacity.

Muscular Strength: All six resistance exercise trials showed statistical significant difference in both upper and lower body strength post treatment

Exercises to Do After Mastectomy

Shoulder shrug

While you sit or stand, lift your shoulders toward your ears. Relax your shoulders, and let them drop to their usual position.

Shoulder roll

While you sit or stand, roll your shoulders from front to back and up to down.

Shoulder blade stretch

While you sit or stand, place your arms down straight, palms front.

Raise your arms and bring your hands together above your head. Hold for 5 seconds.

Repeat 2 or 3 times.

Overhead reach

While you sit or stand, clasp your hands together and extend your elbows.

Lift your arms toward your head.

Hold for 3 seconds.

Repeat 2 or 3 times.

Shoulder pinch

Stand with your arms at your sides.

Bring your elbows back, and squeeze your shoulder blades together. Keep your shoulders back and down.

Hold for 5 seconds.

Repeat 2 or 3 times.

Wall climb

While you stand, face a wall, with one hand on the wall.

Walk your fingers up the wall until you feel a stretch.

Hold that position for 5 seconds.

Slowly walk your fingers back down to the starting position.

Repeat 2 or 3 times.

Elbow circles

While you sit or stand, put your right hand on your right shoulder, and your left hand on your left shoulder.

Raise your elbows until you feel a stretch.

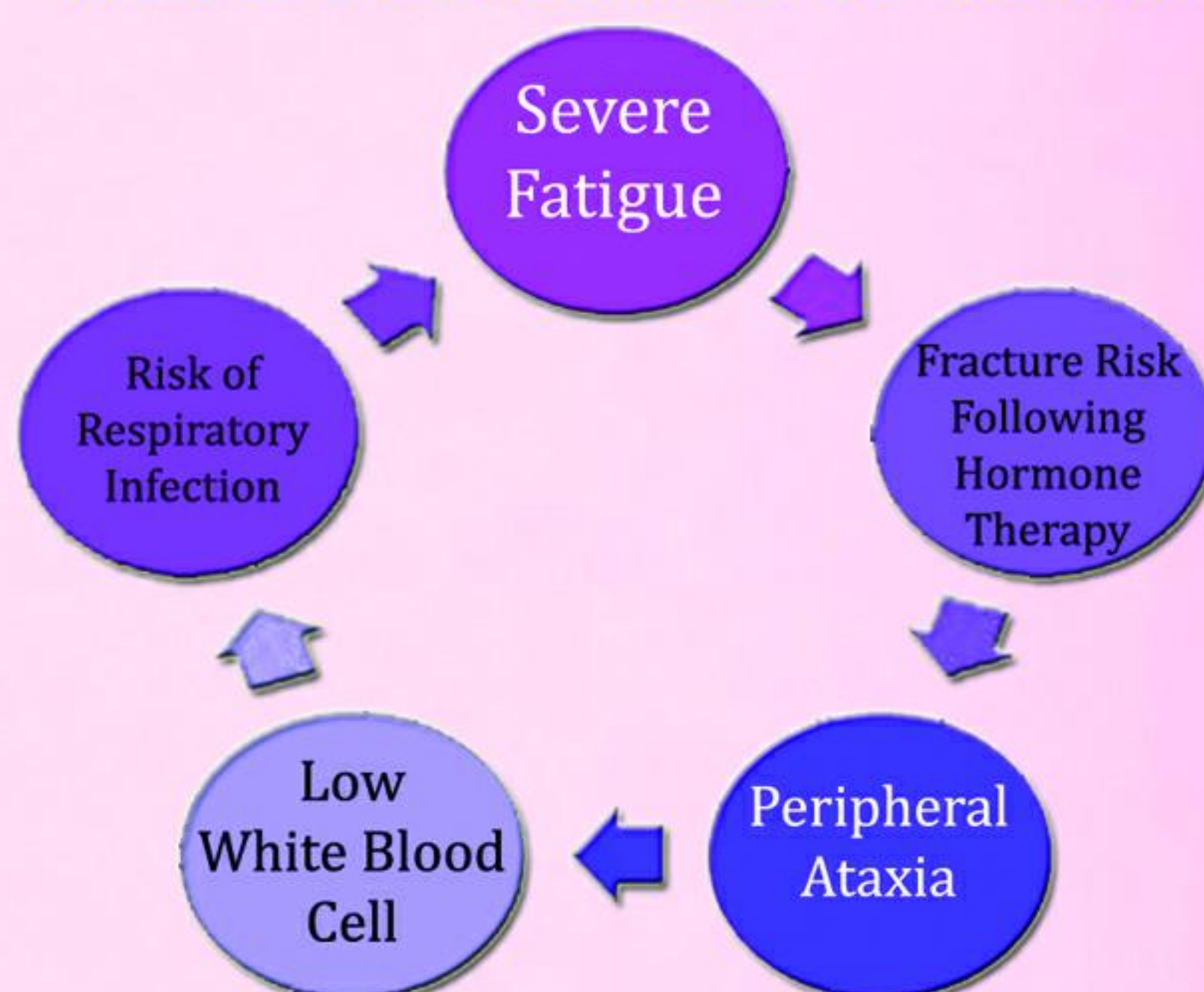
Make circles with your elbows. Start small and then make larger circles.

Change direction with your circles.



P. Nandini Eshwari
MPT 1st YEAR

SAFETY PRECAUTION OF EXERCISE

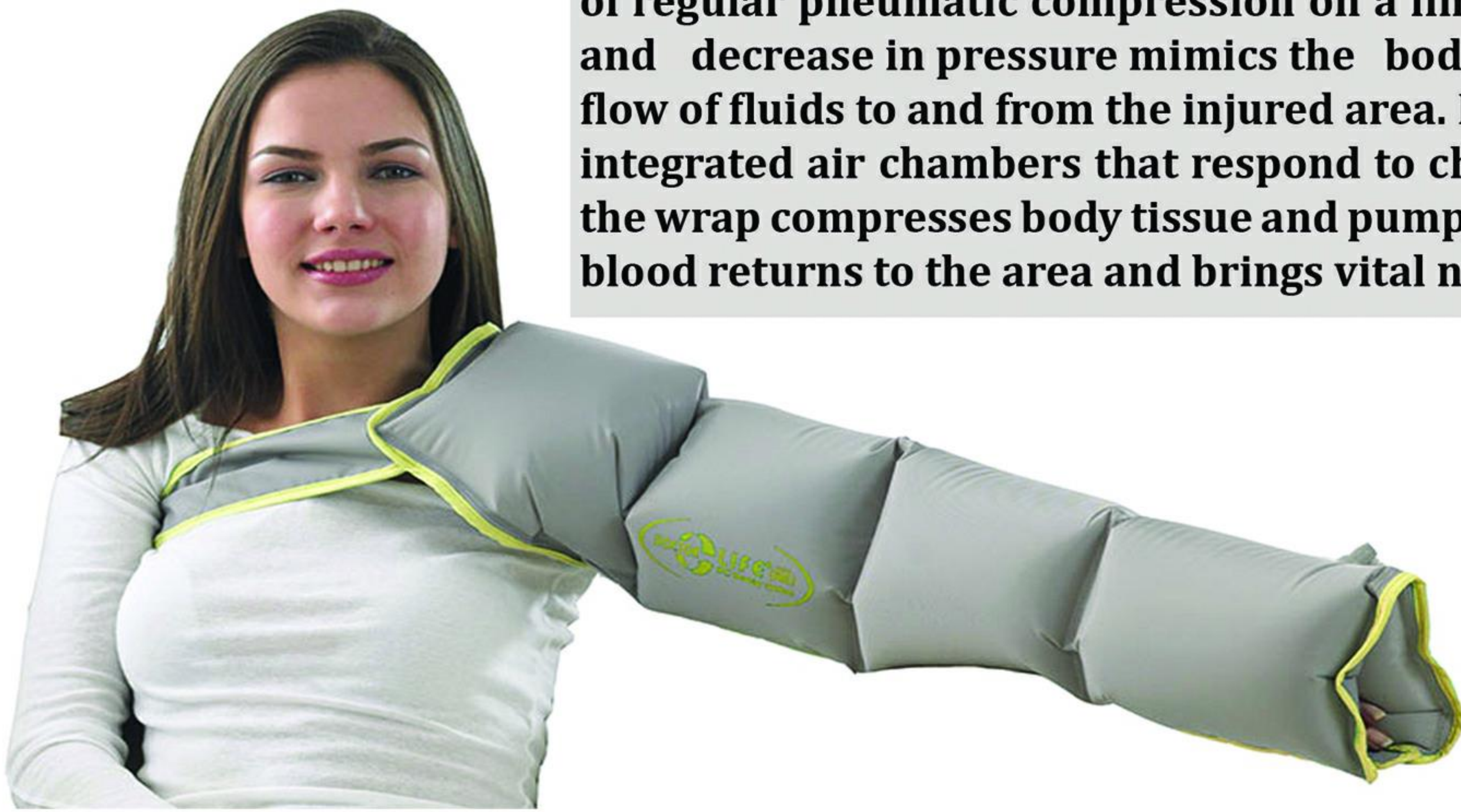


INTERMITTENT PNEUMATIC COMPRESSION THERAPY



T.Kriba, MPT First Year

Intermittent pneumatic compression therapy is a physical therapy management that consists of regular pneumatic compression on a limb or other area of the body. The intermittent increase and decrease in pressure mimics the body's natural muscle pumping action and enhances the flow of fluids to and from the injured area. Most intermittent compression systems use wraps with integrated air chambers that respond to changes in pneumatic pressure. As air flow is increased, the wrap compresses body tissue and pumps away excess fluid. As air flow is decreased, oxygenated blood returns to the area and brings vital nutrients to the tissues.

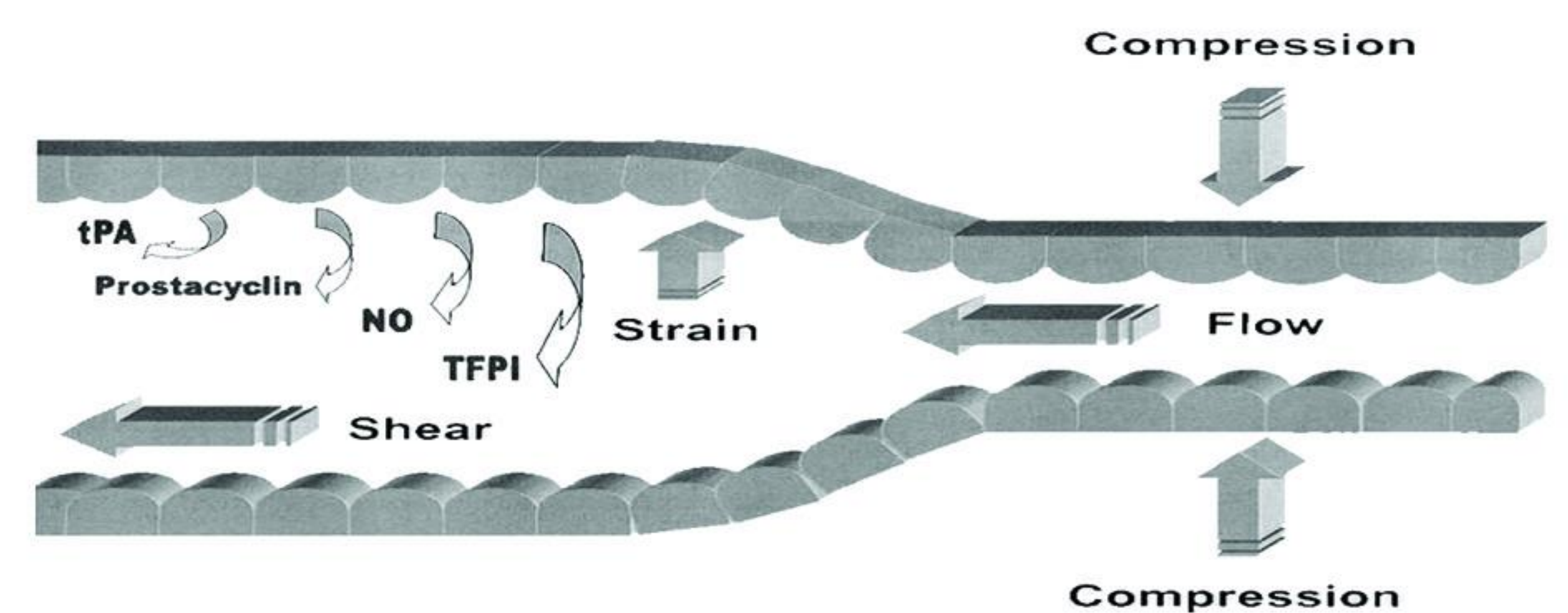


How it will be working:

Intermittent pneumatic compression consists of an inflatable garment for the leg and an electrical pneumatic pump that fills the garment with compressed air. The garment is intermittently inflated and deflated with cycle time and pressure that vary between devices.

Mechanical effects of pneumatic compression on a vein or artery:

The pneumatic compression increases intravascular flow, shear and compressive strain on endothelial cells with the resulting release of biochemical mediators.



Benefits of Intermittent Compression Therapy

Reduce edema - Excess fluids, or edema, can contribute to swelling and reduce range of motion. Active compression helps remove lymph, cellular waste, and other fluids.

Reduce pressure - Swelling caused by edema results in uncomfortable pressure in the surrounding area, which can be relieved with active compression therapy.

Faster healing - As excess fluids are pumped away, fresh, nutrient-rich blood is pumped toward the injured area. Damaged tissues heal faster when they can get vital nutrients and oxygen. The healing process after surgery typically includes build-up of excess fluid, pain, and swelling.

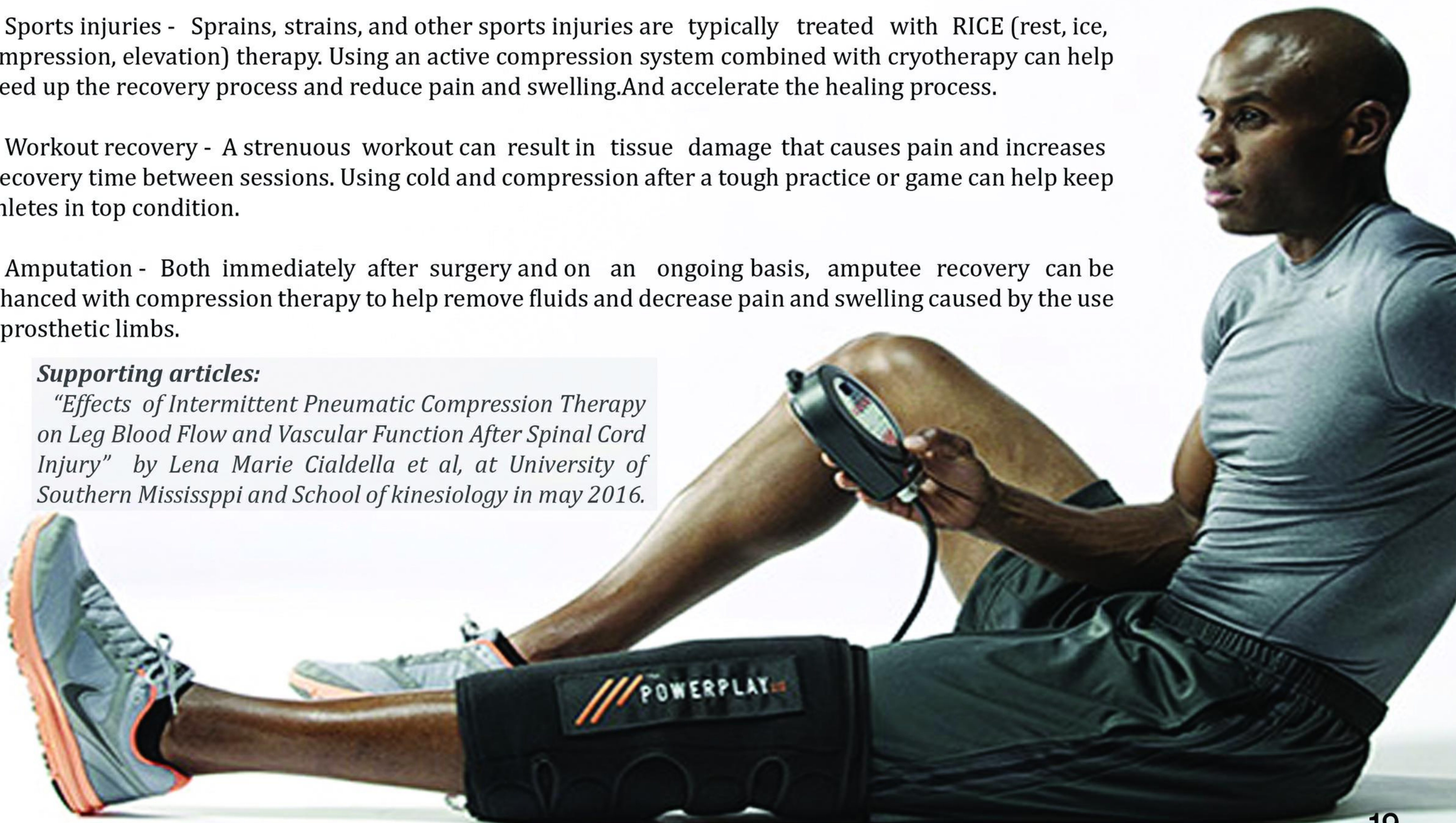
Sports injuries - Sprains, strains, and other sports injuries are typically treated with RICE (rest, ice, compression, elevation) therapy. Using an active compression system combined with cryotherapy can help speed up the recovery process and reduce pain and swelling. And accelerate the healing process.

Workout recovery - A strenuous workout can result in tissue damage that causes pain and increases recovery time between sessions. Using cold and compression after a tough practice or game can help keep athletes in top condition.

Amputation - Both immediately after surgery and on an ongoing basis, amputee recovery can be enhanced with compression therapy to help remove fluids and decrease pain and swelling caused by the use of prosthetic limbs.

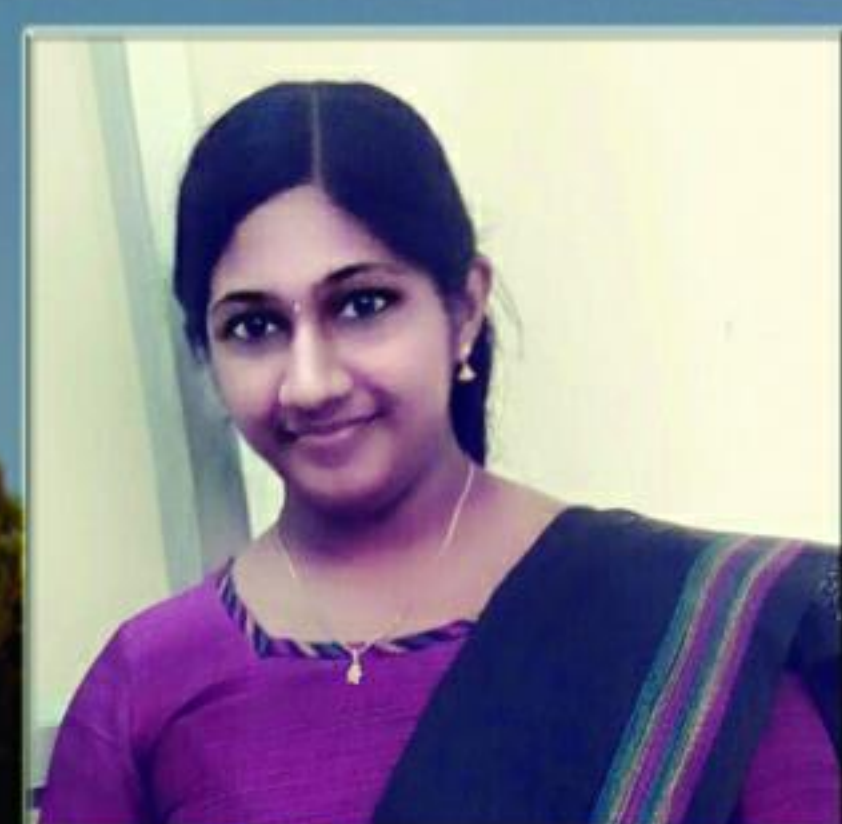
Supporting articles:

"Effects of Intermittent Pneumatic Compression Therapy on Leg Blood Flow and Vascular Function After Spinal Cord Injury" by Lena Marie Cialdella et al, at University of Southern Mississippi and School of kinesiology in may 2016.



NORDIC WALKING . . .

A SUPERCHARGED FITNESS ROUTIENE



**S. Deepika
Shrishudhi P**

2012-13 Batch,
SVC OPT

Modern lifestyle, with its lack of everyday physical activity and exercise training, predisposes people to chronic diseases including, Obesity, Diabetes, Hypertension and CHD. Although, brisk walking and Gyming are good forms of exercises, they are either considered arduous or time – consuming and has not been adopted by a meaningful proportion of population. Therefore, identifying forms of physical activity that are easily accessible are warranted.



WHAT IS NORDIC WALKING?

Nordic walking is a simple and feasible form of physical activity that can be done by nearly everybody, everywhere and at almost any time. It is the same as brisk walking except for the additional use of specially designed poles that provide the advantage of actively involving the upper body and arms. It attracts people of all heterogeneity because it is effective, adorable and fun!!

NORDIC WALKING POLES – ARE THEY SIMILAR TO TREKKING POLES?

Nordic walking poles and trekking poles may look similar, but there are significant differences in design, which allow them to serve different purposes. Nordic walking poles are usually lightweight poles with releasable strap system and removable rubber tips that are angled with push – off.

HOW TO DO NORDIC WALKING?

- * Poles are used besides and behind the body in a pushing action.
- * The body's natural gait pattern called reciprocal gait is accentuated when using Nordic walking poles.
- * The stride lengthens, and spinal rotation is the key to achieving walking "with attitude". This recruits more muscles but actually often lowers perceived exertion because more muscles are being used.

NORDIC WALKING – IT'S BENEFITS:

- * It incorporates 90% of the use of body muscles (only 40% while walking without poles).
- * Increase of up to 46% of higher calorie expenditure, hence keeps you fit and energetic.
- * Poles propel the walker along, thus it is perceived as less workout than actual true physical exertion.
- * It improves the posture, balance and co – ordination.
- * It is a social work out and works wonders for pregnant women.
- * It is a great alternative to running.
- * Ensures safer strolls in elderly adults.
- * Reduces the pressure on hip and knee joints.
- * It is one of the most effective cross training technique for athletes and sports people who require ultimate cardiovascular and endurance conditioning.
- * Provides upper body work out.
- * It is easy to learn and appeal to all ages and fitness levels.
- * No need of special exercise clothing and can be done anywhere.
- * It combines exercise with nature which has been proven to boost mood.



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Neuro Muscular Exercise (NEMEX) in Orthopaedic Practice: A Conceptual View



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Exercise always has a therapeutic effect and its applications have a promising effect in the outcome on a recovering individual irrespective of the cause. Even though age has a strong influence on the outcome of disease process, exercises has a strong influence on the mind. The physical recovery predominantly depends on the exercise prescription of the physical therapist and demands a holistic and a conceptual approach. This paper describes the possible neurological concepts which can be implemented in orthopaedic exercise prescription practice.

In a normal orthopaedic practice the exercise prescription is purely based on the complaints and the clinical scenario presented by the individual. It may address the concerned joint and its adjacent structures. For example, in OA knee the focus will be on quadriceps and its adjacent muscles., as Quadriceps weakness is common, strength training is the primary outcome in rehabilitation. Also, these patients presents with a functional instability along with defective neuromuscular function. Now it's time for us to analyze and imply some basic neurological principles into the orthopaedic practice to make it more effective and conceptual with a strong scientific background.

According to Stephanie, a neuromuscular approach to an orthopaedic issue will not only hasten the recovery process but also prevent further recurrence. Outcome of any exercise prescription needs to have a functional recovery which should be the priority. This not only promotes recovery and prevents recurrence as well as improve the confidence levels of any individual.

The aim of a neuromuscular training program is to improve the sensorimotor control and achieve a functional stability. These exercises are designed in such a way that it mimics the day to day function of an individual. The quality is emphasized more than the quantity and the progression purely depends on patient's neuromuscular function. The methodology is based on bio-mechanical and neuromuscular principles and the intervention is highly individualized.

The aim of a neuromuscular training program is to improve the sensorimotor control and achieve a functional stability. These exercises are designed in such a way that it mimics the day to day function of an individual. The quality is emphasized more than the quantity and the progression purely depends on patient's neuromuscular function. The methodology is based on biomechanical and neuromuscular principles and the intervention is highly individualized.

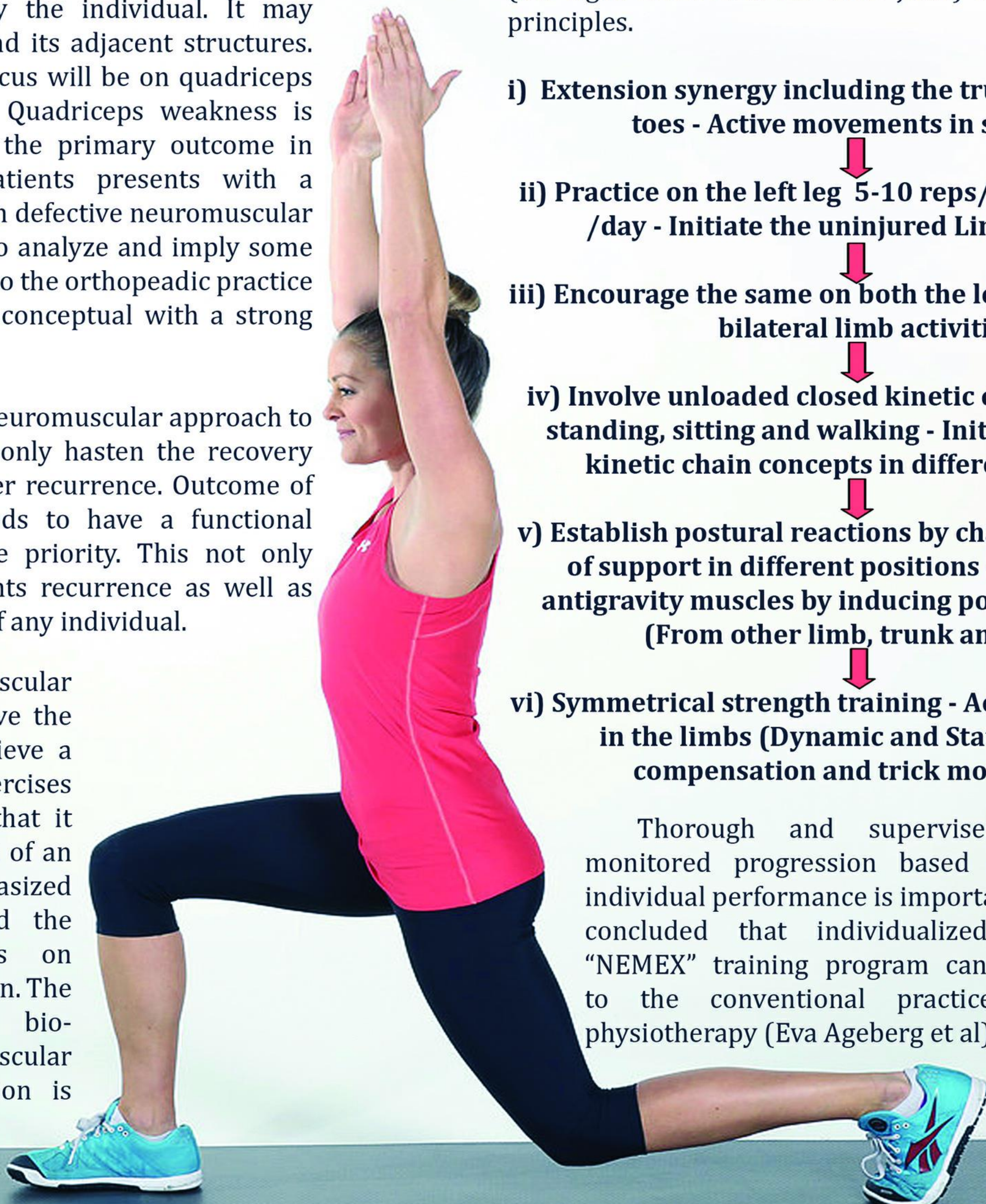
The important steps are as follows,

- i) Active movements in synergies
- ii) Initiate the uninjured Limb synergies
- iii) Application of bilateral limb activities
- iv) Initiate with closed kinetic chain concepts in different positions
- v) Provocation of the antigravity muscles by inducing postural reactions (From other limb, trunk and arms)
- vi) Achieve equilibrium in the limbs (Dynamic and Static) without compensation and trick movements.

Hence as the name suggests Neuro Muscular Exercise (NEMEX) may suffice and replace the conventional practice of exercise prescription. To have a better understanding, "NEMEX" concept is discussed in the following flow chart (for right osteo-arthritis knee joint) based on the above principles.

- i) **Extension synergy including the trunk, hip, ankle and toes - Active movements in synergies**
- ↓
- ii) **Practice on the left leg 5-10 reps/2 to 3 sets /Twice /day - Initiate the uninjured Limb synergies**
- ↓
- iii) **Encourage the same on both the legs - Application of bilateral limb activities**
- ↓
- iv) **Involve unloaded closed kinetic chain exercises in standing, sitting and walking - Initiate with closed kinetic chain concepts in different positions**
- ↓
- v) **Establish postural reactions by challenging the base of support in different positions - Activation of antigravity muscles by inducing postural reactions (From other limb, trunk and arms)**
- ↓
- vi) **Symmetrical strength training - Achieve equilibrium in the limbs (Dynamic and Static) without compensation and trick movements.**

Thorough and supervised sessions with monitored progression based on the pain and individual performance is important. Hence it may be concluded that individualized and supervised "NEMEX" training program can be an alternative to the conventional practice in orthopaedic physiotherapy (Eva Ageberg et al).



SPENCER TECHNIQUE FOR FROZEN SHOULDER

Spencer technique is an osteopathic manipulative technique applied for any shoulder dysfunction, which was developed by Spencer D.O. in 1916. It focuses on glenohumeral and scapulo-thoracic joints for manipulation. It is a technique which includes seven steps.



G. T. RAMIYA,
INTERN - SVCOPT

Steps of spencer technique:

1. Shoulder extension with elbow flexed
2. Shoulder flexion with elbow extended
3. Circumduction with compression
4. Circumduction with traction
5. Shoulder adduction with external rotation
6. Shoulder abduction with internal rotation
7. Stretching tissues and pumping fluids with the arm extended

Effects and uses:

- It increases range of motion
- Stretching of soft tissues
- Increase in synovial fluid motion
- Regulation of muscle tone
- Reduction of muscle spasm

A comparative study has been conducted in Sri Venkateshwaraa college of Physiotherapy, Pondicherry to find out the effectiveness of Spencer technique and Gong's mobilization coupled with ultrasound for frozen shoulder patients. This study is conducted on 30 patients who are affected by unilateral frozen shoulder. They were randomly divided into 2 groups (group A & group B) with 15 patients in each group. Group A received Spencer technique with ultrasound and Group B received Gong's mobilization with ultrasound therapy. SPADI and ROM are used as outcome measures. The duration of the study was for 4 weeks.

Between group analysis of post values shows that group A is more significant than group B with the p value < 0.0001. Therefore it is concluded that Spencer technique with ultrasound therapy (Group A) is more effective than Gong's mobilization with ultrasound therapy in reducing pain and improving the range of motion in frozen shoulder patients.



A. MENAGA
BPT FINAL YEAR, SVCOPT

MORTON'S NEUROMA

Causes:

There are a number of common causes for Morton's Neuroma, (though the condition can arise spontaneously for reasons still unknown). The Neuroma often occurs in response to irritation, pressure or traumatic injury to one of the digital nerves leading to the toes. A thickening of nerve tissue results as part of the body's response to the irritation or injury.

Abnormal foot movement used to compensate for bunions, hammertoes, flatfeet and other conditions can lead to irritation and development of Morton's Neuroma. Pronation of the foot may cause the heads of the metatarsal bones to rotate slightly, thereby pinching the nerve running between the metatarsal heads. Chronic pressure or pinching causes the nerve sheath to enlarge, becoming increasingly squeezed, producing worsening pain over time, if not addressed.

Morton's Neuroma can be exacerbated when tight shoes providing little room for the forefoot are worn. Activities which over-pronate the foot (such as walking barefoot in sand) may increase the pain associated with Morton's Neuroma, as will any high-impact activity, such as jogging.

WHAT IS MORTON'S NEUROMA ?

Morton's Neuroma (MN) is a condition associated with the common plantar digital nerves, caused by entrapment of the nerve and repetitive traction underneath the deep transverse metatarsal ligament leading to epineural and perineural fibrous overgrowth.

A checklist of symptoms includes:

- Burning pain occasionally numbness in the ball of the foot.
- Radiating pain from the ball of the foot to the toes.
- Intensifying pain during activity and when wearing shoes.
- Occasional numbness, discomfort, tingling or "electrical shock sensation" in the toes.
- Pain between the third and fourth toes, often occurring from the outer side of one toe to the inner side of the adjoining toe.
- Pain upon leaving the starting blocks in running sports.

Exercises to Help Recovery

As you begin the recovery process, exercises can help to ease some of the foot pain and discomfort. These exercises will strengthen the supporting muscles in the foot and ankle and increase the space between the metatarsal bones. While supporting yourself, use a bottom step to exercise your foot. Place your forefeet on the step and let your heels hang free. Raise your toes and then drop your heels below the step creating a deep stretch.

The second stretch can be done against a countertop or wall. Stand about two to three feet from the counter or wall. Then lean forward using your hands to brace yourself. Slowly bend your right knee and lift you heal from the ground. Repeat this movement on the left side and continue to repeat this motion, feeling an ease in the forefoot tightness.

The last exercise is done in the seated position. Using a sturdy chair with a straight back, seat tall. Extend one leg and lift it until the leg is not touching the seat. Flex your foot and move it in a circular motion. Repeat this exercise on the other foot. If any of these exercises cause you pain, stop immediately. The goal of these stretches is to relax some of the tightness that you feel in your foot.

Fascial Stretch Therapy

Flex the body to the max....

Fascia.....

Is a specialized system of the body that has an appearance similar to a spider's web or a sweater, Fascia is a very densely woven, covering and interpenetrating every muscle, bone, nerve, artery and vein, as well as, all of our internal organs including the heart, lungs and brain and spinal cord. The most interesting aspect of Fascial system is that it is not just a system of separate coverings. It is actually one continuous structure that exists from head to toe without interruption. In this way you can begin to see that each part of entire body is connected to every other part by the fascia, like the yarn in a sweater.

The problem with many standard stretching programs is, well, they are standard. An athlete will finish her workout, run through her "usual" stretches, may be paying extra attention to tight hips, sometimes pushing through some pain to get that final stretch. Sadly, this type of stretching is not effective and may even be causing more tightness and inflexibility. When you cause pain with stretching, your muscles respond to protect themselves, tightening up in a rebound type effect.

FST synchronizing with movement turning the nervous system following a logical anatomical order, where stretch the neuromyofascia but not just muscle, by using multiple planes of movement target entire joint, get maximal lengthening with traction by resist the action of movement and facilitates (note: while stretch not entire bony end level to reach)

Fascial Stretch Therapy (or FST) is a very different approach developed by Ann and Chris Frederick a type of stretching that targets not only the muscles, but the fascia, the connective tissue that surrounds muscles, bones, and joints. FST also targets the entire joint and joint capsule, using traction to remove restrictions from movement and to stimulate lubrication. A therapist will gently pull and move the arms, legs, spine, and neck in a smooth motion through varying planes of movement. There is no pain, not even discomfort. Instead, the gentle movement is stimulating and relaxing at the same time.

SESSIONS SHOULD BE.....

FST sessions are performed on massage type table equipped with comfortable padded straps that stabilize the part of body. Not being worked on client typically wear loose fitting or athletic clothing Flexibility session resemble a fluidly choreographed between the therapist and the client.

The experience is relaxing and pain free many client Zone out while being stretched and wake up with what feels like an entirely new body. Following 1-3 sessions.

MYOFASCIAL RELEASE

Myofascial Release is a safe and very effective hands-on technique that involves applying gentle sustained pressure into the Myofascial connective tissue restrictions to eliminate pain and restore motion."

FASCIAL STRETCH

Fascial Stretch Therapy is a neuro myofascial manual therapy that focuses on the connective tissue system rather than isolated muscle or fascia treatment. We assess passive, active and resisted movements in functional positions as well as on the treatment table.

BENIFITS

Increase Range of Motion

Muscular Balance and Symmetry

Reduced Pain & Risk of Injury

Improved Posture & Muscle Function

Improved Circulation

Decrease Compression and Impingement in the Joints.

CONDITIONS TREATED

Osteoarthritis,
Facet joint dysfunction,
radiating pain, Trigger point,
sprains and sprain,
carpal tunnel syndrome,
chronic pain,
Thoracic outlet syndrome,
mobility issues.



S.LOGESWARI
INTERN SVC OPT

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FLUTTER VS ACAPELLA

- A BREATH TAKING CONVERSATION



FLUTTER



Hey I'm Flutter used to help loosen mucous so it can be coughed out of the lungs.



ACAPELLA



Hello this is Acapella, I am an unique handheld device, keeps the lungs clear of mucus and make breathe easy. I also combines the benefits positive expiratory pressure or PEP therapy with airway vibrations



When you use me the ball inside me tend to bounce which causes increased pressure inside the chest that sends vibrations down through the airway this combination of increased pressure and vibrations help the mucus moves from the lungs into the airways where it can be coughed out

Inside me i have a flutter valve which contain a small steel ball in a cone shaped valve when you exhale the ball, It moves up and down which cause vibrations your airways make you exhale against resistance

Let me explain how to use me, It is so simple.

1. Relax in a sitting position with your head tilted slightly back.
2. Slowly breathe in deeper than a normal breath, and hold your breath for 2-3 seconds.
3. Hold my stem horizontal to the floor so the ball can bounce and roll inside and allow you to blow out. Put me in your mouth and close your lips around the stem.
4. Position me at the proper angle and blow out a little faster and longer than normal. Repeat steps 1-5, 5-10 times, all the time trying to stop your desire to cough.
5. Finally, take a full, deep breath into your lungs and hold your breath for 2-3 seconds.
6. Blow out forcefully until you can't blow any more air from your lungs. Make sure my ball is bouncing and rolling as you blow out. Repeat this forceful exhalation (steps 7 and 8) 1 or 2 more times. Try to cough the mucous from your chest. This should clear your chest.

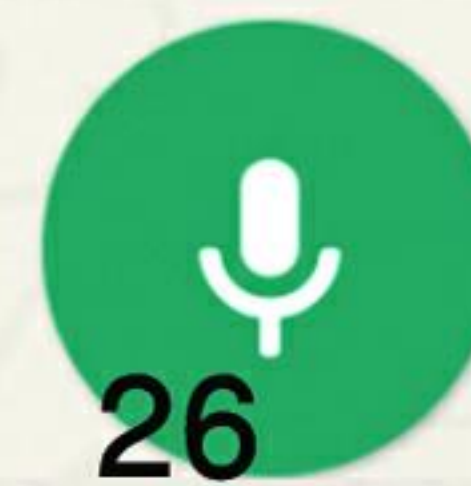


Is it simple? Here is my usage

- Breathe in and out regularly through my valve 5 times. Then breathe in and out slowly 5 times. Your exhalations should be about 3 times longer than your inhalations.
- Keep alternating between regular and slow breathes. At the end of each exhalation, hold your breath 2 to 3 seconds.
- After 5 or 6 exhalations try to cough if you have not done so already. This will help get rid of mucus.

Thats fine, but my session should last for 5-15 minutes depending on your respiratory condition. To avoid becoming overly tired, add an extra, shorter session instead of pushing yourself too far 🙄🙄🙄

I am designed to be easily cleaned and sterilized. Plus, it can be used with your mask or mouthpiece nebulizer. Good luck! 🙌🙌🙌



SNAPPING HIP SYNDROME

Snapping hip syndrome is also known as "COXA SOLTANS" or "DANCER'S HIP" is a condition that is characterized by a snapping sensation or audible click noise in or around the hip when it is in motion.

INCIDENCE:

Higher prevalence of snapping hip syndrome in general population is 5% to 10% between the ages of 15 and 40 and is more common in young athletes and dancers. It is frequently seen in female than male.

TYPES:

EXTERNAL (most common): Iliotibial band snapping over greater trochanter of the femur.

INTERNAL: Iliopsoas tendon snapping over a bony prominence of the pelvis.

INTRA-ARTICULAR (LEAST COMMON): Usually due to a tear of the cartilage and/or loose body within the hip joint that may also cause the hip to "lock-up".

CAUSES:

Most often the result of tightness in the muscle and tendons surrounding the hip. Movement of a muscles,tendon or ligament rolls over a bony prominence.

COMMONLY INVOLVED SITES ARE:

When you stand up straight,the Iliotibial band is behind the trochanter.When you bend your hip,the band moves over and in front of the trochanter.This may cause the snapping noise.

The iliopsoas tendon,which connects to the inner part of the upper thigh,can also snap with hip movement.

The snapping occurs when the rectus femoris tendon,which runs from inside the thigh bone up through the pelvis moves back and forth across the ball whenthe hip is bent and straightened.

A cartilage tear or bits of broken cartilage or bone in the joint space or a loosen piece of cartilage can cause can cause snapping.

PEOPLE WHO ARE IN RISK OF DEVELOPING SNAPPING HIP SYNDROME:

Athelets
Dancers
Gymnast
Horse riders
Soccer players
Excessive weight lifting or runners

SINGS & SYMPTOMS:

- Pain and discomfort due to inflammation of the iliopsoas bursae.
- Audible snapping or popping noise on hip movement(lifting;lowering or swinging the leg).
- Tenderness at the touch or with deep muscle compression.
- Swelling;discolouration or stiffness.
- Weakness in the leg when trying to lift it forward or sideways.
- Tightness in the front or back of the hip.
- Swelling in the front or side of the hip.
- Difficulty performing daily activities such as rising from a chair and walking.

TEST TO DIAGNOSE TIGHTNESS AROUND HIP BY THERAPIST:

Ober's test
Faber test
Thomas test
Milgrim's test

PHYSICAL THERAPY TREATMENT:

ACUTE PHASE:

- Deep massage over the outside of the thigh and gluteal muscles.
- Rest and icing.
- Gentle stretching.
- Electrotherapy modalities like ultra sound and phonophoresis used in the acute phase.

Exercise for snapping hip syndrome:

Both active and passive stretching exercise that include hip and knee extension should be the focus of the program.

Myofacial release techniques to an surrounding tight muscles.

Stretching the hip into extension and limiting excessive knee flexion avoids placing the rectus femoris in position of passive insufficiency. Thereby maximizing the stretch to the iliopsoas tendon.

Strengthening exercise for the hip flexors (Double leg bridge, Single leg bridge, Clamshells, Side planks, Abduction lift, Pelvic drops & Side steps).

PREVENTION METHOD FOR SHS:

Warming up before starting a sports, dance or heavy physical activity.

Gradually increase the intensity of an activity. Follow a consistent strengthening and flexibility exercise program to maintain good physical conditioning.



A.DEVATHA
S.SHEERIN BANU

BPT FINAL YEAR - SVCOPT

Every human being has bones which constitute the framework that supports the body, this is the skeleton. Because its elements (bones) are inside our body, under the layers of skin and muscles, it is also called an endoskeleton. The external artificial system, added for support and protection, is called an external skeleton or exoskeleton.

The bionic suit, which was launched in 2012, is just one example of increasing the use of robotics in the medical world. It was designed by Nathan Harding, co-founder and CEO of Ekso Bionics.



P. Annapoorani, P. Bavatharani
BPT Final Year, SVCOPT

What it is all about ?

The Berkeley-based company Ekso Bionics broke new ground in rehabilitation services and gait training when it developed the Ekso suit - an aluminum and titanium exoskeleton that helps patients suffering from varying degrees of paralysis or hemiparesis with movement. The suit helps facilitate patient progress with progressive step modes and enforces normal biomechanical alignments and gait patterns. Even more impressive, patients typically start walking during their first session with the Ekso suit.

Who needs it ?

Exoskeletons play a major role in the rehabilitation of patients affected by spinal cord injury, or brain injury who have lost motor functions of the lower limb. Patients who have been on wheel-chair will face a lot of problems with regard to their movement and also deal with many psychological issues. Also the human body is physiologically designed in a way such that it can stand, walk and move around, but a wheelchair user loses this ability and leads to having a negative impact on the body. To overcome such problems, exoskeletons play a major role in rehabilitation and enable a wheelchair-user to be independent of wheelchairs, enabling him to walk around. It has been designed in such a way to support and expand the physical capabilities of its users, particularly people with physical disabilities.

What does it do?

Used as an extension of the body structure, HAL (Hybrid Assistive Limb) is used to support movement and to lift weights. In medical purposes the suit is used by patients with disabilities to rise from a chair, to walk or to lift various weights.

How it works ?

The range of sensors used in construction varies from acceleration sensors to bioelectrical sensors, angular sensors, acceleration sensors and floor reaction force sensors (COP/COG sensors). All these sensors could not be useful without the usage of a powerful CPU to process the information, motors to actuate its elements or a battery power source to energize the entire system.



HAL (Hybrid Assistive Limb) has a height of 1.6 meters and weights 23 kg, it is divided between the top part and the two mobile parts of the bottom. Top section weight is around 8 kg and the parts attached to legs together weigh 15 kg. The battery provides a range of 3 hours where the user can lift weights, can walk or use the suit for entertainment purposes. Maximum weight that can be lifted with the suit is 70 kg, a value that exceeds capabilities of a simple human. It offers a full support for persons with limb disabilities.

HAL Design and Mechanics

When a person attempts to move their body, nerve signals are sent from the brain to the muscles through the motor neurons, moving the musculoskeletal system. When this happens, small biosignals can be detected on the surface of the skin. The HAL suit registers these signals through a sensor attached to the skin of the wearer. Based on the signals obtained, the power unit moves the joint to support and amplify the wearer's motion. The HAL suit possesses a cybernic control system consisting of both a user-activated "voluntary control system" known as Cybernic Voluntary Control (CVC) and a "robotic autonomous control system" known as Cybernic Autonomous Control (CAC) for automatic motion support.

Conclusions

The link between medicine and technology becomes increasingly strong as more complex robots and systems like this one are developed. An exoskeleton suit like HAL has an enormous potential which can be used to support people with temporary or permanent disabilities.

Bionic Boy or Girl Meets World

The Exoskeletons Are Coming . . .



WALLET NEUROPATHY



R. Atchayan



V. Srinithi

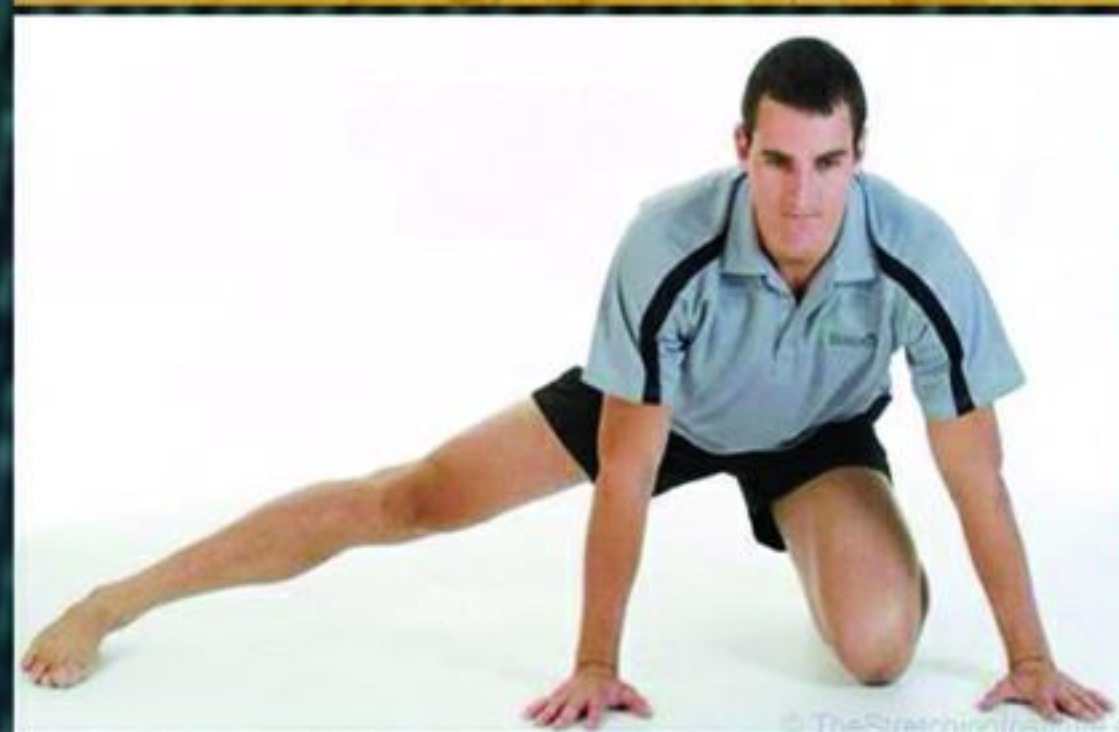
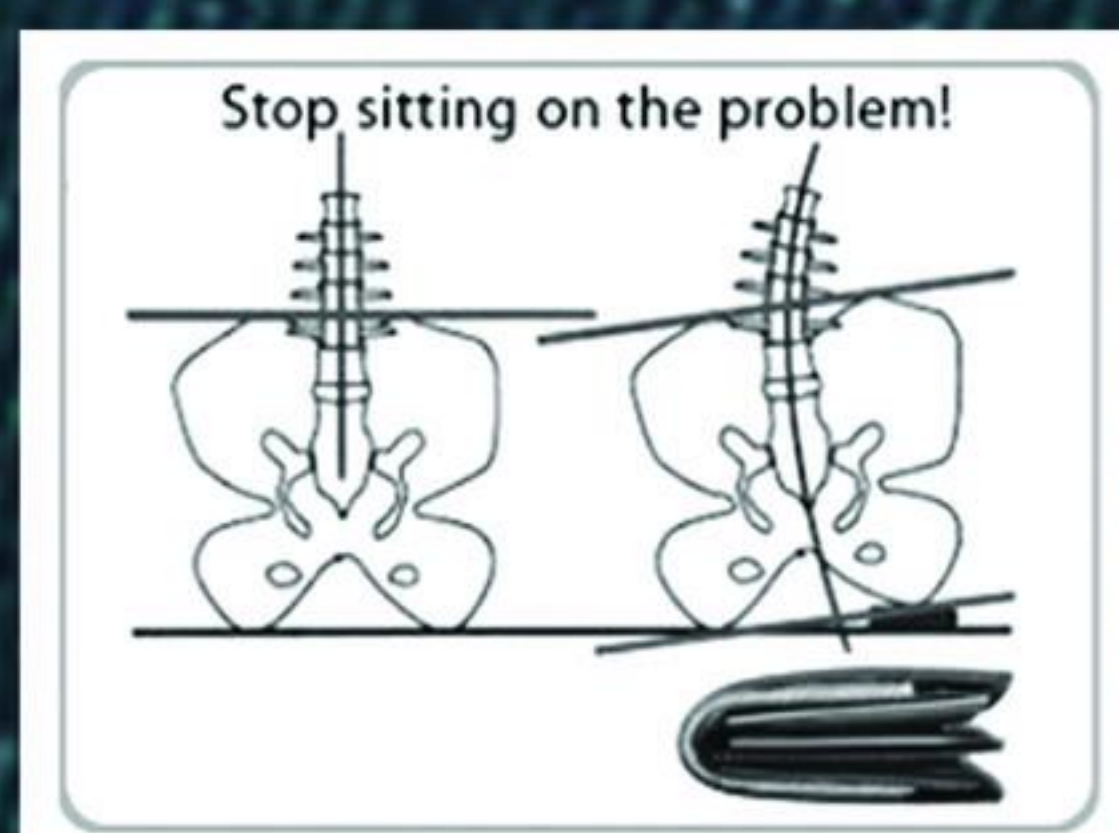
BPT FINAL YEAR
SVC OPT

WHAT IS WALLET NEUROPATHY?

Wallet neuropathy is an economical condition which usually occurs in males who carry their fat wallet on their back pocket. Sitting with wallet on back pocket usually have a susceptibility to damage the sciatic nerve and piriformis muscle

WHAT WALLET NEUROPATHY LEADS TO?

- Piriformis muscle spasm
- A dull ache in the buttock
- Pain down the back of the thigh, calf and foot
- Tilting of the spine
- Muscular imbalance
- Increased pain after prolong sitting
- Gait dysfunction



TREATMENT MEASURES TO CONTROL NEUROPATHY

1. FOAMROLLER EXERCISE

The foam roller is used to apply deep tissue myofascial release massage to the muscle. One leg is placed across the other to put the muscle on stretch. Then moves over the roller in a slow and controlled manner working backwards and forwards along the length of the muscle.

2. STRENGTHENING EXERCISES FOR PIRIFORMIS

- RESISTANCE BAND EXERCISES
- SIDE LYING CALM EXERCISES
- HIP EXTENSION EXERCISES

Repeat each exercises 15 times and gradually build upto 2 sets of 20 repetitions.

3. STRETCHING EXERCISES FOR PIRIFORMIS

- OUT HIP STRETCH
- LONG ADDUCTOR STRETCH
- SHORT ADDUCTOR STRETCH

For every stretch the position should be holded for 30 secs ,repeat 3-5 times and stretch 3 times a day.

4. ULTRASOUND

Patient must be placed in a FAIR position [flexed adducted internally rotated]. Intensity of 2.0-2.5 w/cm² for 10-14 mins.

With the gel broad strokes longitudinally along the piriformis muscle.

5. MUSCLE ENERGY TECHNIQUE

Lie on your front bent the affected leg ant the therapist will rotate the bent leg outwards [horizontally] as far it is comfortable. Gentle pressure should be applied in this position. while returning to the normal vertical position the therapist will resist the movement and hold it for 10 secs. Repeat this process until you get the further improvement in mobility.

Rotationplasty

The ankle joint becomes the knee joint



V. Sasikala
BPT Final Year,
SVCOPT.

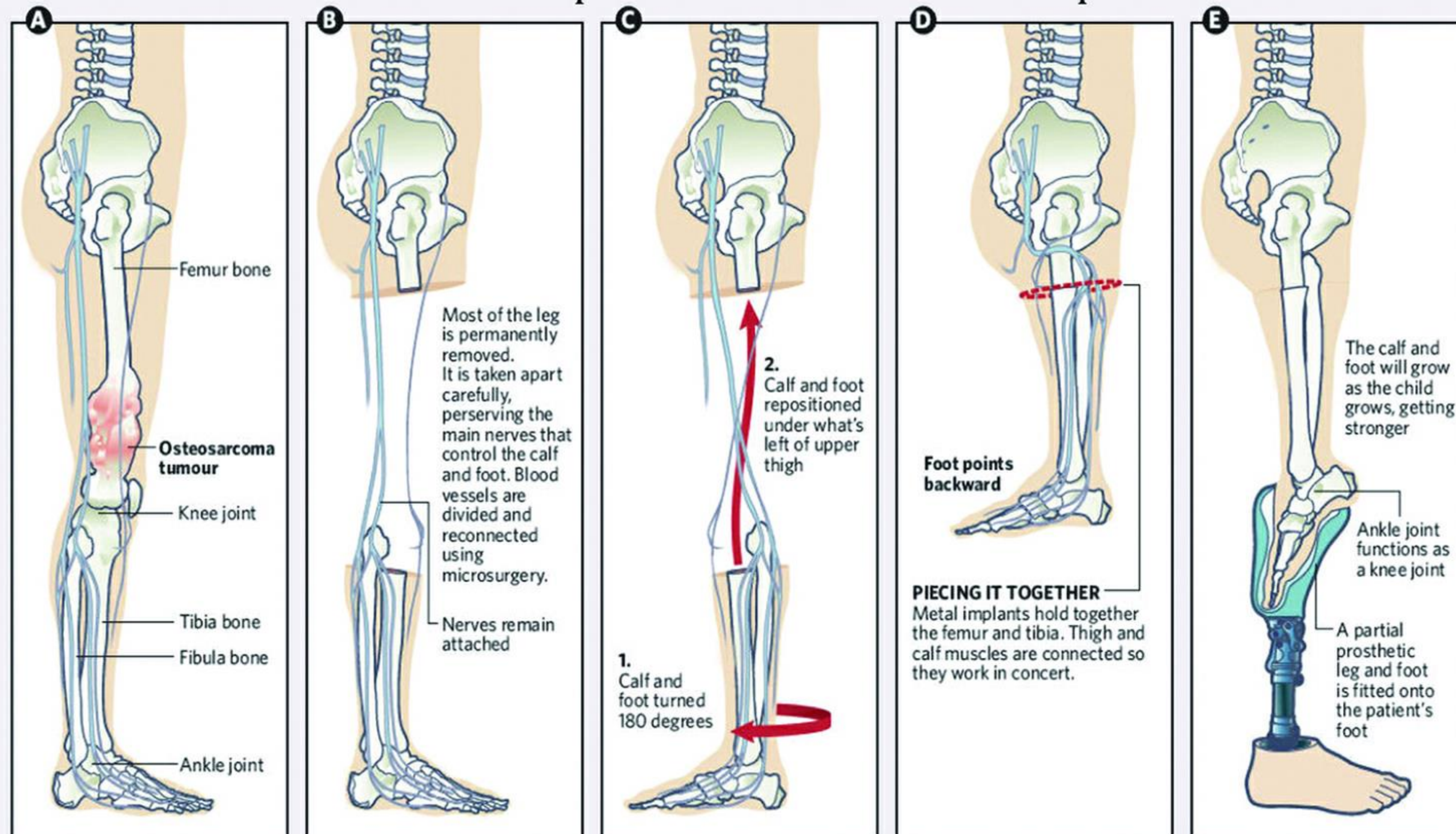


Each patient has their own unique requirements with respect to their age, the location and type of tumor and their prognosis. You also have to take into consideration the requirements, desires and wishes of their family. Therefore there is no one ideal form of limb sparing surgery. The choices available may be wide, but occasionally they may be restricted. This can be because of the size and location of the tumor.

Rotationplasty is a form of partial amputation. For youngsters with tumours of the lower end of the thigh bone (distal femur) the advantage of a rotationplasty compared with an amputation is that it is in effect a modified below knee amputation. The limb is shortened and the lower leg is rotated 180 degrees permitting the ankle to act as a new “knee” joint. An artificial limb known as an exo-prosthesis has a special socket that fits onto the foot. Rotationplasty has improved function over a trans-femoral amputation allowing patients to actively participate in day today activities.

Transforming the ankle into a new knee

Rotationplasty surgery varies according to the location of the tumour. Below is the common form. Converting the ankle to a new biological knee joint offers better leg control than full amputation with an above knee prosthesis.



A way to regain lost function after limb salvage procedure: Physio helps you.

- Mobilization begins with 2nd day initially with hip flexion < 80 degree.
- Promote active ROM of ankle only.
- Gluteal strengthening exercises are begun.
- Balance and gait retraining.
- Co-ordination home therapy.
- Neuromuscular retraining begins.
- Core muscle strengthening.

Gait training: A description.

- Fitting of the prosthetic device that depends on the shape of the leg.
- A gradual increase in wear time.
- Gait training with locked knee begins.
- Hip hiking rather than circumduction to clear foot.
- Turning and stair climbing is reviewed.
- weight-bearing in stance.
- Gradual progression of skill acquisition.
- Eliminate hip hike with emphasis on even stride.
- Normalization of gait.

Do you know the effects and uses?

- It results in a shortened leg with the ankle joint at the position of the former knee joint.
- The resulting stump is able to bear a prosthesis.
- It is capable of moving a shank prosthesis.
- There is no phantom pain.
- The foot is able to carry load via the sole skin.
- It allows for growth in younger child or adolescents.
- High level of function and excellent quality of life is achievable. Eg. sports and normal gait pattern.

what are the problems after rotationplasty?

- Loss of strength and function.
- Stress like response and psychological disturbances.
- Loss of balance and coordination.
- Limb length discrepancy leading to abnormal gait pattern.
- Torsional deformities.
- Joint contracture.
- Restricted ROM.
- Nerve injury.

Prosthetic fitting

- fitting of prosthetic device occurs ~ 6 weeks post op
- Prosthetist should be familiar with rotationplasty
- prosthetic socket type dependent on shape of leg, plantar flexion available and the age.
- receiving prosthesis is important milestone (Forni et al 2012)

References

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Have a happy life



Miss Physio: Hey dear, what happened? Why you are looking so dull? Anything serious?



Miss teen: Nothing so serious. As usual, I am facing the same problem during every month of my periods.



Miss Physio: Is it? Can you please explain me what kind of problems you are facing?



Miss teen : The level of the pain hurts me lot , which starts before 3 days of my periods and continues till the last date .Because of that I Can't concentrate on my family , work



Miss Physio: Alas! What are the other symptoms you present with?



Miss teen: I am suffering from both physical and emotional symptoms such as irritability, mood swing, anxiety, bloating, low back pain, abdominal cramps and breast tenderness.



Miss Physio: Don't worry ya. I am here for you and to be clear, it is PMS (PREMENSTRUAL SYNDROME). Did you consult your obstetrics regarding this?



Miss teen: Ya, she told to have enough rest and she prescribed some medicine. I am OK with the medications but again I am getting into it.



Miss Physio: Oh ok? Have you heard about any exercise to reduce your symptoms associated with PMS?



Miss teen: Hurrah ya, How come the exercise solve the obstetrics problem.



Miss Physio: Yes. Here is a solution. Lot of exercise protocol is there to reduce PMS. So many researches done for it and the best is Pilates.



Miss teen: Pilates? Is it a exercise regime can you explain it in detail?



Miss Physio: Pilates is the type of exercise helps to improve physical strength, flexibility, posture, enhance mental awareness. Exercise must be performed with breathing. Before the training warm up phase for 5 to 10 minutes (quadriceps stretch, hamstring stretch) and then pilate exercise for 30 minutes , end up with cool down phase 5 to 10 minutes. Can be performed daily except the days of mensus.



Miss teen: Good, how does its works?



Miss Physio: Exercising with deep breaths can produce endorphins (pain relieving substance) helps to ease the pain over the core muscles by stretching & strengthening. The spine muscles are mobilised during the exercise, and also it gives relief to the spasm of the tightened back muscles.



Miss teen: Thank you so much dear. I am gonna start pilates from today itself.



B. Sumitha
BPT Final Year, SVCOPT



PILATES FOR PREMENSTRUAL SYNDROME

Boon for womb . . .



BINDHU OVIYA R,
BPT FINAL YEAR,
SVCOPT

What is SCENAR THERAPY?

SCENAR is a form of bio-energy medicine invented by Russian scientists. The SCENAR device (Self-Controlled Energo Neuro Adaptive Regulator) sets up a two-way communication with the nervous system encouraging it to redirect its activity towards areas of weakness in the body

How to apply and how does SCENAR works?

The SCENAR device works through your skin (transdermal). It uses computer-modulated electrical impulses to stimulate your brain (electroneuro-stimulator). The brain responds with it's own signal which is picked up by the SCENAR device. The SCENAR device then interprets the brain's response and modifies its next impulse back to the brain to work at restoring balance to the body (This is called active reflex biofeedback). The brain, in turn, sends a modified response (and so on) until equilibrium is achieved (homeostasis).

During this 'conversation', of constantly varying electrical frequencies and waveforms, the brain also instructs the nervous system to generate Neuropeptides (the key biochemicals needed by your body to heal itself – the body's own pharmacy). This is what the body was designed to do.

After an injury or onset of disease the communication system between the brain and the affected body part can 'break down' or 'get used to' the signal from that body part. The brain begins to accept the abnormal signal as "Normal". This is a reason why many conditions become chronic and unresponsive to treatment. SCENAR breaks the body out of this habit and restores correct communication resulting in effective and more complete healing.

What is the effect of SCENAR THERAPY?

- There is a considerable improvement of the general state with an increase in adaptive ability.
- Speeding up & slowing down the manifestations of pathological process.
- Returning disturbed functions back to normal.
- Normalization of the vascular & blood functions
- Endocrine-immunity response of the organism
- Normalization of the metabolic processes
- Pain-Relief • Anti-inflammation • Anti-allergy • Anti-swelling

What can SCENAR treat?

SCENAR has been widely & successfully used for the treatment of a broad range of ailments including:

- Musculoskeletal problems
- Circulatory & Respiratory problems
- Digestive problems
- Post-operative pain
- Acute or chronic pain following injury
- Headaches & Migraine

What does it feel like?

SCENAR will be placed on the skin-over the spine, abdomen or affected area & a gentle tingling sensation will be felt. As the healing begins the skin may redden or change colour in relation to the surrounding area &/or the sound of the machine may change as it passes over the point of pain. This is the start of the healing process & the initial treatment may take up to hour. Once the area begins to change the SCENAR treatment is complete.

How often will I need treatment?

The number of the treatment varies depending on the complaint, but acute problems need fewer treatment. For Eg: Acute pain may only need 3-4 sessions, but if you have had a problem for a long time, then it is not going to be resolved in just one session.

Are there any contra-indications/ side effects?

There are no known side effects. However although this is a very safe treatment, it is not recommended to the patients with cardiac pacemaker, those suffering epilepsy or those who are pregnant.

What can I expect once I have finished my treatment?

SCENAR continues to work even after you have completed your course of treatment. Most people continue to progress for approximately 3 months after treatment & some continue to progress for upto 5 months. It is also common to experience flare ups of old symptoms & pain during this period as the body continues to heal & this completely normal.

What else do I need to know?

For a best result it is recommended that you do not shower for 2 hours before or after treatment, or to engage in demanding or stressfull activities during that period. Also it may be necessary to shave an area of skin to ensure good communication between the device & body.

How it differs from other therapies?

Only the SCENAR combines energy measuring functions along with real time feedback & constant adjustment to deliver the correct type & amount of energy to the body. This means each impulse is different from the pervious one, so the body is unable to adapt to the signals. The SCENAR impulse is high amplitude, so it stimulate C-fibres which make up about 85 % of the nerves in the body. This explains the rapid effect of SCENAR treatment on the whole body.

And finally.....Please Remember!

Your body takes time to heal! Your symptoms didn't just suddenly appear, just as they took time to develop & establish themselves, recovery takes time and patience too! By focusing on the positive effects of the treatment as long as your symptoms are changing (this means they may feel better or worse) then the treatment is working.



SCENAR THERAPY
A Revolution in Electrotherapy

MIRROR NEURON THERAPY

A New Approach in Neurorehabilitation



S.SUBASHINI,
BPT Final Year,
SVCOPT

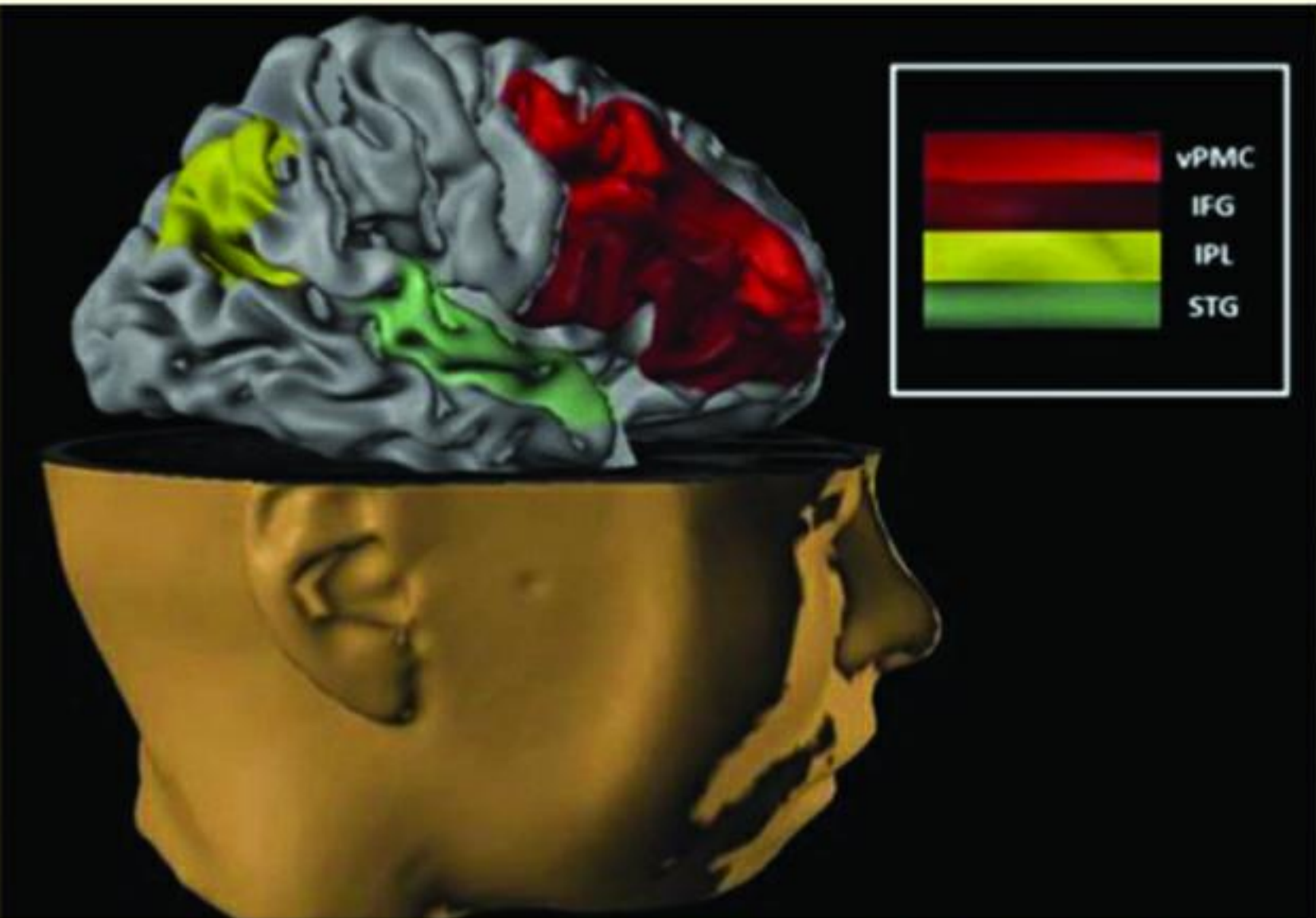


OVERVIEW:

Mirror Neuron system is a group of specialized neurons that “mirrors” the actions and behaviour of others. The involvement of mirror neuron system is implicated in neurocognitive functions (social cognition, language, empathy, theory of mind and neuro psychiatric disorders).

LOCATION OF MIRROR NEURON:

Mirror neurons are identified first in the ventral premotor cortex and inferior parietal lobule in the brain. It discharges during the execution of ecological goal directed manual and oral actions, as well as during the observation of the same action done by other individual. Mirror neuron system (MNS) also have a role in understanding action, immitation and motor functions.



LOCATION OF MIRROR NEURON

PHYSIOLOGY:

- In primates, ventral premotor and rostral inferior parietal neurons fire during the execution of hand and mouth actions. Mirror neuron cells also fire when hand mouth actions are just observed. Mirror neuron provides a simple neural mechanism for understanding the actions of others.
- In humans, posterior inferior frontal and rostral inferior parietal areas have mirror properties. These human areas are relevant to imitative learning and social behaviour.

PROCEDURE:

Procedure includes stimulation of "audio-visual" mirror neurons. Some of the mirror neurons could respond to sound that are specific for actions. This therapy is given by using designed multi-media techniques.

Hand action videos include 105 videos of daily life movements, lasting for 8 seconds each. The videos were played sequentially and repeated after 2 minutes. The total session of training lasted for 30 minutes.

The another video include dynamic sights of mountain, rivers, forest, clouds and city sights but no human or animal. The total length of the video lasted for 30 minutes.(2 minutes rest in the middle of each video).

CONDITIONS APPLICABLE:

- | | |
|------------------------------------|----------------------|
| *Post- Stroke rehabilitation | *Autism |
| *Childhood Disintegrative disorder | *Asperger’s disorder |
| *Pervasive Developmental disorder | *Rett’s syndrome |
| *Cerebral palsy | *Emotional disorders |
| *Motor impairment | *Aphasia |

BENEFIT:

MNS activation leads to improvement in motor functions in stroke patients as well as language function of stroke patients with aphasia.

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SCHROTH METHOD

ART WITH THE SHAPE OF YOU

SCHROTH METHOD:

The best innovative technique for scoliosis among all other therapies is "SCHROTH METHOD".

It is a conservative exercise in a three – dimensional approach to elongate the trunk and correct imbalances of the spine.

SCOLIOSIS:

It is a three – dimensional deviation in the axis of a person's spine. There is a curvature of 10 degree to the right or left side from the normal spine.

PROBLEMS FACED BY SCOLIOTIC PERSONS

pain in back, shoulder , neck and buttock pain.

Respiratory and cardio problems.

Constipation due to curvature causing tightening of stomach and intestine.

Limited mobility and painful menstruation.

THE EXERCISE GOALS:

Stabilization of the spine.

Mobilization of the stiff body parts.

Improve postural alignment.

Pain reduction.

Increase muscle strength and endurance.

Improve ADL activities.

Improve cardio-pulmonary function.

What are the techniques of schroth method?

The schroth method involves a set of mobilization,shaping,stretching and strengthening exercises that consists of rotational angular breathing.

1.MOBILIZATION EXERCISES:

Forward and upward dipping of the trunk

Rocking cradle.

Stretching shortened pectoral muscles lying on the oblique board.

Trunk hanging forward in the standing position.

2.SHAPING EXERCISES:

Double twist in supine position.

Funnel circles with arms.

Lying on the concave side with assistance.

Pelvic derotation.

Stretching upwards between two poles.

3.STRETCHING AND STRENGTHENING EXERCISES:

Learning to sit on ischial tuberosity.

Raising arms in the prone position.

Lifting the pelvis in lateral position.

Lifting weight with shoulder on concave side.

Isometric resistance exercises in prone, supine, lateral position.

WILL I BE STRAIGHT AFTER THE SCHROTH METHOD?

Reducing the spinal curve depends on duration of scoliosis. The goal is certainly to reduce the curve but overall to halt the curve progression.

HOW LONG WILL I BE IN THERAPY FOR?

Schroth program will be based on the individual evaluation. Treatment sessions are typically 45-55 mins and can range from 5 sessions upto 20 sessions.

R.KANDHAN

P.KALAIVANAN

**BPT FINAL YEAR -
SVCOPT**

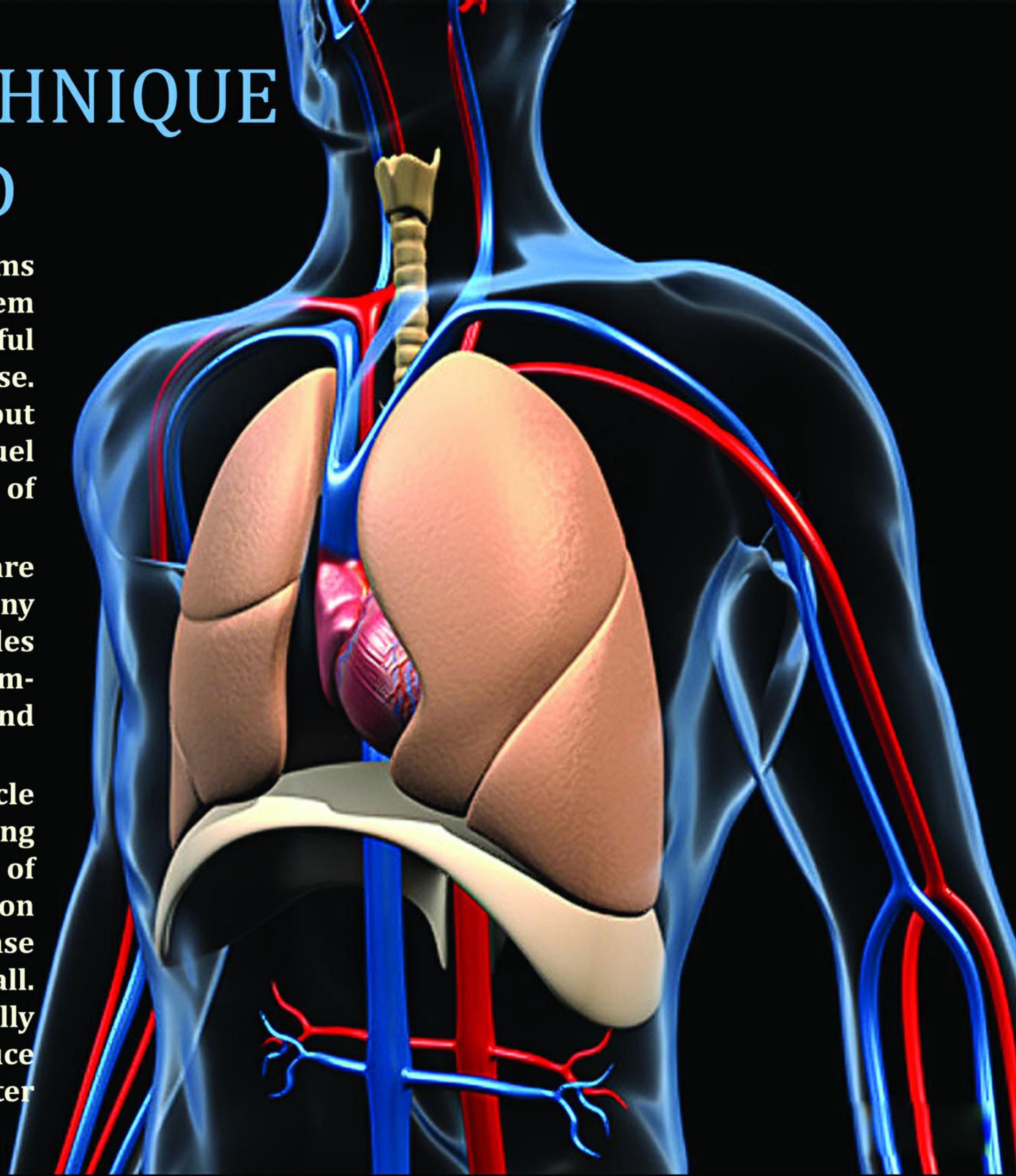


PRACTICE OF PNF TECHNIQUE IN PATIENT WITH COPD

COPD is described by persistent breathing symptoms and airflow restriction that is due to respiratory system abnormalities usually caused substantial contact to harmful particles or gases. It is preventable and treatable disease. The major risk factor for COPD is tobacco smoking, but other environmental exposure such as biomass fuel exposure and air pollution may contribute to the onset of symptoms.

The largely responsible muscles for respiration are diaphragm, intercostal and abdominal muscles. And many other muscles have an accessory function including muscles in the neck and perineum. Breathing exercises aim to improve basal, lateral and apical chest wall expansion and diaphragmatic excursion.

Various breathing exercises such as respiratory muscle training, pursed lip breathing and diaphragmatic breathing which improves muscle strength and endurance of respiration. Proprioceptive neuromuscular facilitation (PNF) is another form of exercises designed to increase flexibility of respiratory muscles and mobility of chest wall. PNF in respiration is the term used to describe externally applied proprioceptive and tactile stimulus that produce reflex respiratory movement. Response that appear to alter the rate and depth of breathing.



PNF for Respiration comprises of a variety of techniques such as Peri oral stimulation, vertebral pressure of the upper and lower thoracic spine, co – contraction of abdomen, intercostal stretch and anterior stretch basal lift are applied to enhance respiration.



A .KIRTHIGA
S. SELVAGANABATHY
BPT Final Year,
SVCOPT

1. Peri – oral pressure: Stimulation is provided by applying firm pressure to the patient's upper lip which is maintained over a length of time. This causes a brief period of apnea followed by increased epigastric excursion (approximately 5 secs). As the stimulus is maintained the epigastric excursion may increase so that the movement is transmitted to upper chest and the patient appears to be in deep breathing.

2. Vertebral Pressure: With the patient in supine position, a firm pressure is applied to the uppermost thoracic vertebrae to increase the epigastric excursion in the presence of a relaxed abdominal wall and pressure is applied to the lower thoracic vertebrae to improve the inspiratory movement of the apical thorax. The pressure should be firm enough to provide intrafusal stretch.

3. Co – contraction of abdomen: In this the pressure is directed across the abdomen to produce intrafusal stretch, thus activating the muscle spindle contralateral to the pressure applied. As those muscles stretch and shorten, they stretch the intrafusal fiber of the opposite muscle and the cycle goes on. This technique helps in improving the epigastric movements and in increasing the tone of the abdominal muscles thereby activating the diaphragm.

4. Intercostal Stretch: This is provided by applying pressure to upper border of the rib in order to stretch the intercostal muscles in a downward direction. Application of stretch should be timed with exhalation. This causes reflex activation of the diaphragm by intercostal afferents and its margins.

5. Anterior stretch basal lift: This technique is done by placing the hands under the ribs of the supine patient and gently lifting upwards. It can be done unilaterally or bilaterally. As the lift is sustained stretch is maintained and increasing movement of the ribs in a lateral and posterior direction can be seen and felt. This in turn causes obvious epigastric movement.

Proprioceptive neuromuscular facilitation is very effective in respiration as it strengthen the muscles of respiration, stimulates the intrinsic muscles of respiration and increases the range of motion of chest wall & visible deeper inspiration. And thus, PNF result in larger expansion of ribs, increased epigastric excursion, change in respiratory rate, involuntary coughing, changes in breath sounds and return of mechanism of chest wall stability. Therefore, PNF of Respiration is recommended for patients with COPD.

Rocabado Exercises

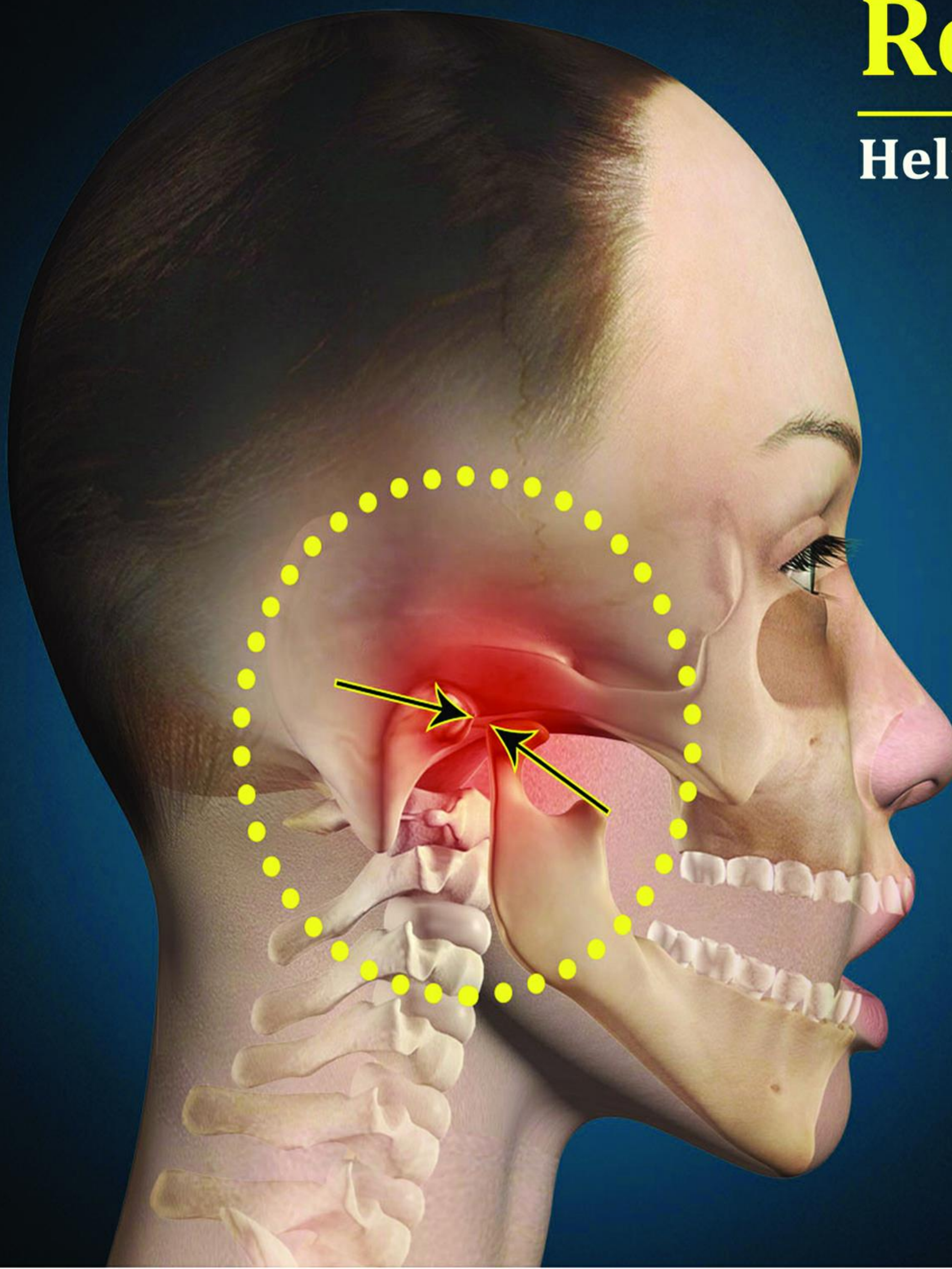
Helping Build The Perfect Bite . . .

Rocabado exercises refer to a system of movements that help treat temporomandibular joint disorders. Mariano Rocabado, DPT, devised the program to help restore normal joint mobility in your jaw. The exercises deal with the relationship of your head to neck, neck to shoulders and lower jaw to upper jaw.

TMD/TMJ

TMD/TMJ stands for temporomandibular joint disorder and is an overall term which encompasses inflammatory disorders of the jaw. Symptoms of TMJ may include headache, earache, neck pain, jaw tenderness or aching facial muscles. TMJ usually occurs when the muscles used for chewing and your jaw joint no longer work together, says McKinley Health Center. Causes of TMJ include grinding and improper alignment of your teeth.

U Carmel Renolin Anista,
K Divya,
BPT IIIyear, SVCOPT



Rocabado Features

The exercises created by Dr. Rocabado, to be performed by the patient at home, consist of six different exercises and six repetitions of each exercise, performed six times per day until symptoms subside. The Rocabado exercises emphasize correct postural position and help to combat the soft tissue memory of your old posture.

Rocabado's 6x6 Exercise Program

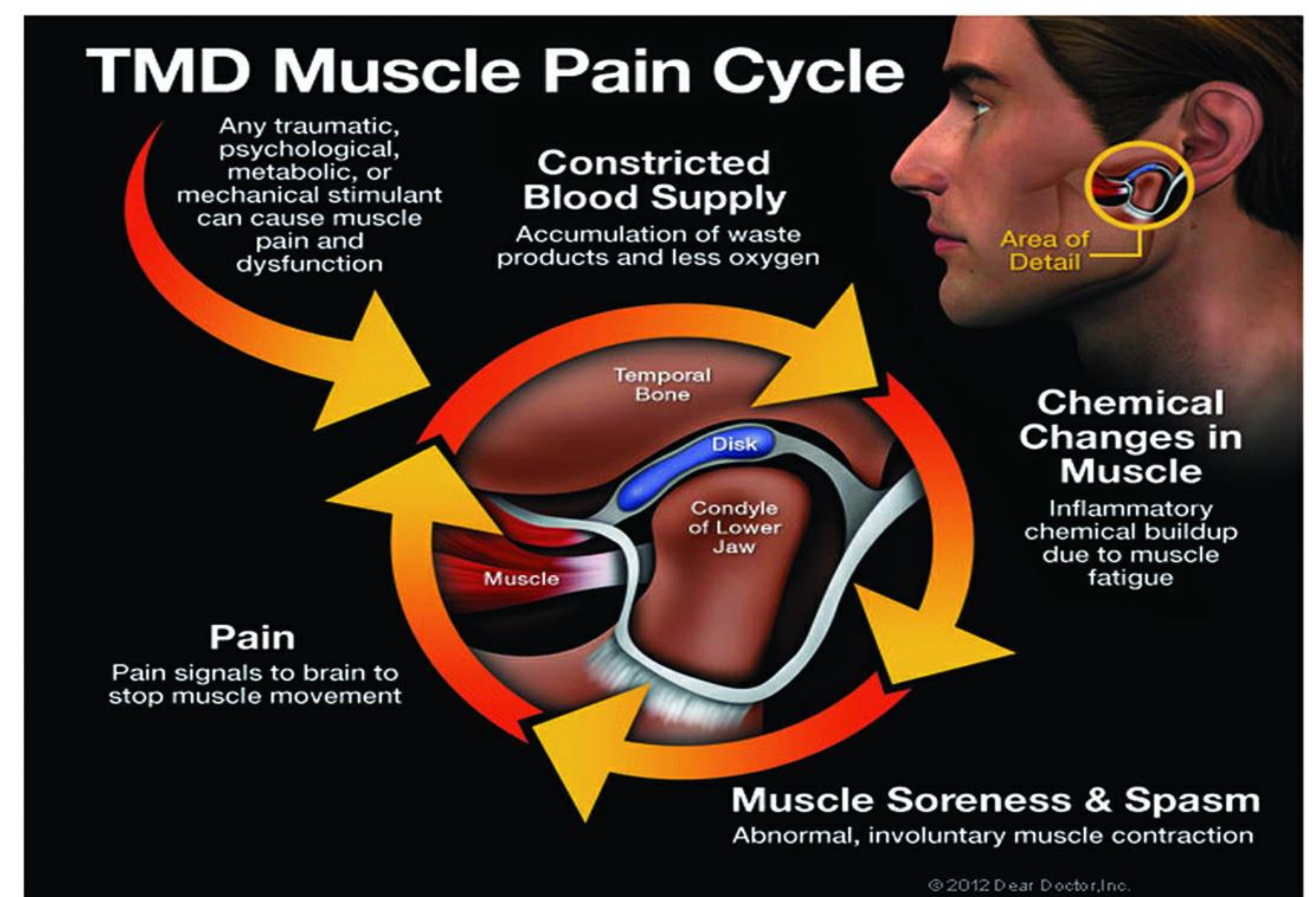
Rocabado advocates the instruction of six fundamental components of activity for treatment of TMJ dysfunction. He recommends that patients complete each activity 6x/session and 6x/day.

The activities are as follows:

- 1) Tongue 'Clucking'** – making a 'clucking' sound positions the tongue against the hard palate in the correct resting position for appropriate nasal and diaphragmatic breathing. Once the activity is practiced, the patient is to attempt to maintain appropriate tongue / jaw resting position throughout normal activity.
- 2) Controlled TMJ Rotation on Opening** – Patients are taught to maintain their tongue on the hard palate while opening and closing the jaw. This position limits opening to rotational portions only and prevents excessive protrusion of the mandible. This range of motion is to also be utilized during chewing, to control hypermobility.
- 3) Mandibular Rhythmic Stabilization** – Patients apply resistance to opening, closing, and lateral deviation with the jaw in a resting position. The goal is to promote normal positioning of the jaw while maintaining appropriate postural alignment.
- 4) Upper Cervical Distraction** – Patient performs upper cervical flexion while stabilizing the cervical spine with a 'hand-collar'. The goal is to relieve neurovascular compression in the upper cervical spine by distracting the occiput from the atlas.

5) Axial Extension of the Cervical Spine – Patients perform cervical retraction movements, effecting upper cervical flexion at the same time as lower cervical extension. The goal is to normalize forward head posture and to normalize the mechanical relationship of the head, neck, and jaw.

6) Shoulder Girdle Retraction – Patients perform retraction and depression of the scapulae in relation to the rib cage. The goal is to normalize upper quarter posture and mechanical relationships.



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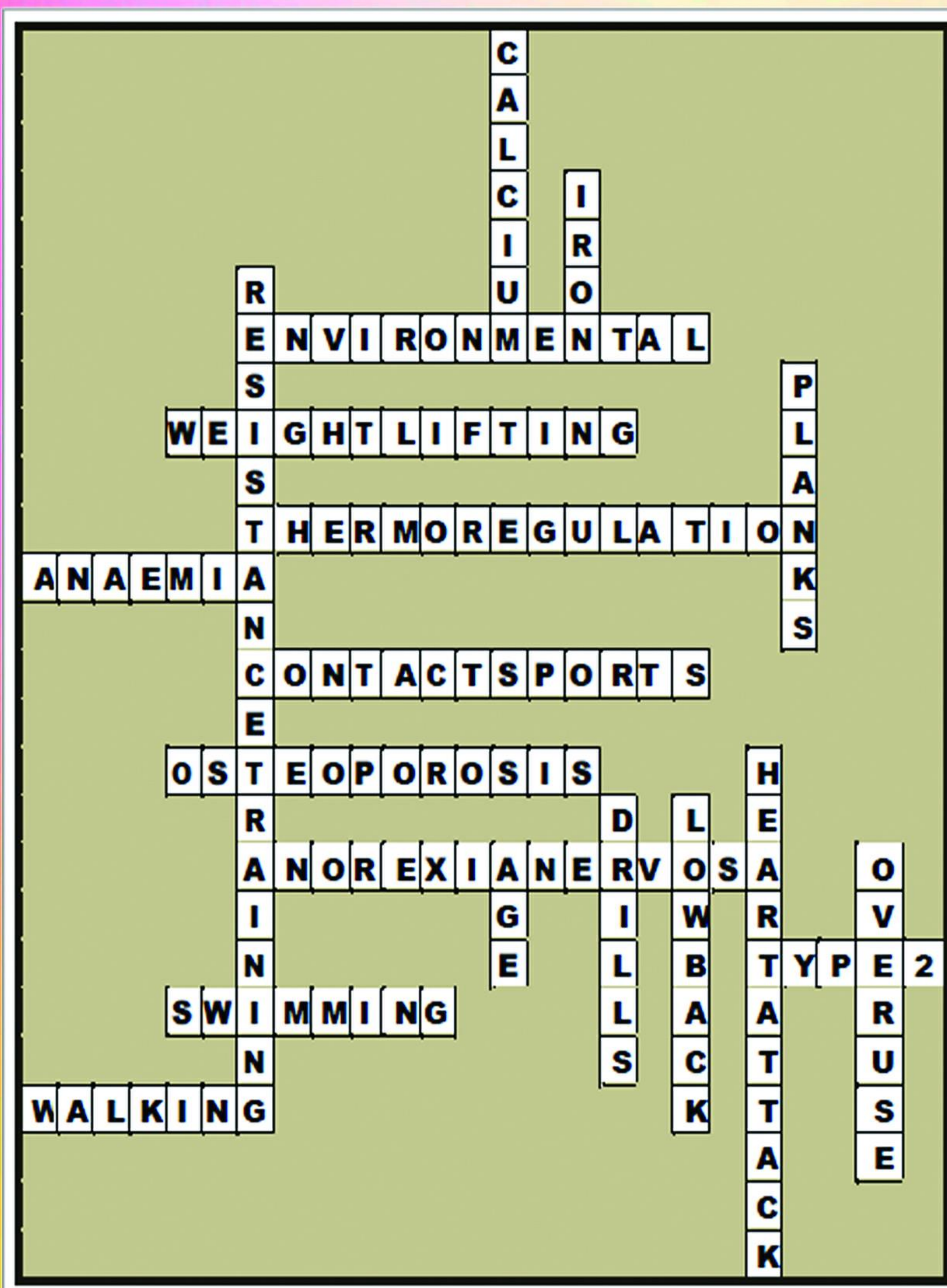


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Answer



PUZZLE NO. 1

Answer

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