EFFICIENCY OF USING "THERAPEUTIC COMBINATION" MASSAGE-NPF TECHNIQUES- KINETIC TECHNIQUES IN RECOVERY OF ACHILLES TENDON RUPTURE – AFTER IMMOBILISATION PHASE

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Key words: Achilles tendon, rupture, massage, NPF techniques, kinetic techniques**.**

Summary

Because this study includes one patient, conclusions of this study is not wish to be generally valid, but are the conclusions drawn from research conducted.

The overall conclusion, which can be extracted from studies is as follows: using the "combination therapy" formed by massage techniques, NPF and kinetic techniques immediately after removal of plaster, in rehabilitation treatment of Achilles tendon rupture, has beneficial effects on the evolution of the patient's condition, prognosis for recovery, the efficiency and the recovery period (within the meaning of shortening the latter). Decreases the risk of joint stiffness and contribute to the sustainability of positive results, reduces swelling of stasis that occurs after prolonged immobilization, restores and increases muscle elasticity. Improves local blood flow and venous return in particular, all these having an more efficient effect in the recovery process.

Topic news

Musculoskeletal disorders are increasingly common in the contemporary period, with preference being affected lower limb, especially calf-ankle-foot complex, an area with significant anatomical and functional role in propulsion and movement.

Modern man is either actively growing or becoming more sedentary. If it is very active, he will overload his body, exceeding the functional capabilities and decreasing energy resources. These factors determine the setting of chronic fatigue, energy depletion, lack of alertness and attention, which cause the occurrence of injuries. The second type of person is a person of increasingly sedentary, with a disordered lifestyle and eating, a life full of flaws and lack of movement, major risks in occurrence of injuries.

Anatomy, physiology and biomechanics of Achilles tendon

Achilles tendon is the terminal tendon of triceps muscle being formed by joining aponeurotic terminals blades located both superficially and deeply into the structure of soleus and gastrocnemius muscle. The distal insertion is on the calcaneal tuberosity. Superficial tendon fibers are extended to the superficial plantar aponeurosis forming the achilleo-***calcaneal-plantar*** complex (ACP), true anatomical and functional unit for propulsion. Achilles tendon is the largest tendon of the body being composed of quaternary beams. It measure 5-6 cm length, 1.2 to 1.5 cm wide and 0.5 to 0.6 cm thickness. Rich in hydrophilic cells is also the strongest, the spiral structure allow supporting of a 300 kg thick. Although it receives a double innervation, internal popliteal sciatic nerve and posterior tibial nerve, the tendon is poorly vascularized in the medium part. (Chanussot, JC & Danowski, RG, 2005 Sbenghe, T., 1981)

Triceps muscle transmits its power through Achilles tendon with maximum effectiveness, friction and resistance are so small that practically the lost of power along the tendon is minimal. (Baciu, C., 1972)

Individual patient sheet

1. Clinical diagnosis: rupture of the left Achilles tendon

2. History:

Name: C.
Surname: C
Age: 48 years
Gender: M
Profession: Accountant
Size: 1.70 m
Weight: 95.5 kg
Logging: August 11, 2008
Therapy intervention period: 11 to 22 August 2008.
Medical history: the common ankle sprain
Diagnosis: rupture of the left Achilles tendon, operated
Current medications: anti-inflammatory, analgesic, anticoagulants

Conduct incident which led to tendon rupture: Because of the physical inactivity and prolonged time spent in the office, the subject reached a weight of 95.5 kg compared with its height of 1.70 m and becoming obese (according to http://www.sanatate.org) additional risk factor leading to the production of the injury. On 17/06/2008, the patient participated in a soccer friendly match. After several minutes of playing, on the very rapid movement of propulsion, made to recover the ball, suddenly felt in the mid Achilles tendon area of the left foot, a pain as if

it had been hit very heavily. This was immediately followed by regional temperature rise and continuity tendon was not felt forming a "moat" when it was pressed. The patient admits his fault that before the game begins he didn't make his stretching exercises as it was necessary. After a long rest, when he tried to walk, limped and the leg was swollen. Surgery took place in a hospital in Italy but plaster removal and rehabilitation device, took place in Romania.

3. Somatic-examination after immobilization: trophicity poor skin, acute pain triggered by palpation or Achilles tendon mobilization, swelling, muscle hypotrophy and hypotonia on the left leg, decreased joint mobility, scar adhesions, walk "limping".

4. Somatic-purpose and functional evaluation of leg and foot

a) Evaluation of stasis edema

This parameter was quantified by measuring calf circumference metric tape at the boundary between the medium and distal third of the calf.

b) The pain intensity felt by the patient on: palpation, Achilles tendon mobilization or while walking. This criterion was measured using the combined scale with numbers and adjectives (published by Borg in 1982) assessment of pain, from 0-5, where 0 represents no pain and 5, maximum pain intensity, life, unbearable.

0 - pain absent
1 - slight feeling of embarrassment
2 - mild pain
3 - average pain
4 - strong pain
5 - very strong pain, unbearable

c) Evaluation of joint mobility was achieved by using goniometry.

d) Assessment of muscle strength was possible by using the scale of the National Foundation for infantile paralysis (Sbenghe, T., 1987 quoted by Balint, T., 2007), which can be explained as follows:

Strength 5 shows the possibility of making movement throughout amplitude against a resistance force equal to the normal (100%)

Strength 4 shows the possibility of making movement throughout amplitude against a average resistance (75)

Strength 3 indicates the possibility of making the whole amplitude movement against the force of gravity (50%)

Strength 2 indicates the possibility of mobilizing segment, but with the elimination of gravity (25%)

Strength 1 delimiting force, by palpation, presence or absence of voluntary muscle contraction (10%)

5. Functional diagnosis: functional deficiency on the left leg

6. Objectives:

1. Decreasing pain of the Achilles tendon and calf
2. Decreasing inflammatory precession
3. To improve circulation to the painful area
4. Correction joint stiffness
5. Fighting vicious march
6. Corrections vicious posts
7. Increasing elasticity and strength in the triceps muscle
8. Calf muscle toning
9. Reduction of triceps contractures
10. Socio-professional reintegration of the patient

6. Means, methods and techniques used

1. Methods and techniques used

Massage: This method was done in two ways: therapeutic massage (on the thigh, calf and foot) and massage of the scar. Massage objectives were: reducing the pain of Achilles tendon, removing fibrous adhesions, mobilization of edema, improve scar appearance, development skin suppleness, improve skin elasticity, reducing muscle contractures

NPF used techniques were:

1. Stretching

2. Slow reversal. This technique was applied mainly for dorsal and plantar flexion but also for the eversion and inversion movement. Involves a dynamic concentric contraction of the stronger agonist muscle group. A second dynamic concentric contraction immediately follows, this time involving the weaker antagonist muscle group. Rest periods don't occur between contractions.

3. Slow reversal hold. This technique adds an isometric contraction at the end-range of each muscle group.

4. **Alternating isometrics.** With alternating isometrics on the leg flexor and extensors muscles, the patient "holds" his position, while manual resistance is alternately applied in a single plane from one side of the body to the other. No motion should occur.

5. Repeated Contractions was made on the dorsal and plantar flexion and also for eversion and inversion muscles.

6. Hold Relax: The therapist is asking the patient to make the move against his hand for roughly 20 seconds. Then, the patient relaxes and the therapist lengthens the muscle and applies a stretch at the newly found end range.

Analyzed element		Initial assessment	Final assessment
Edema		35 cm	33 cm
Achilles tendon pain intensity felt on palpation		5	2
Achilles tendon pain intensity felt on mobilization		5	1-2
Mobility of joints	Dorsal flexion	0°	15°
	Plantar flexion	10°	25°
Muscle strength	Dorsal flexion	2	3-4
	Plantar flexion	3	4-5
	Evers	2	3-4
	Inversion	2	4
Pain felt in the Achilles tendon when the patient is walking		5	1

Kinetic techniques:

- **Dynamic kinetic techniques**:
- **Active mobilization reflex** (stretch-reflex reactions balancing reflexes position), **active assisted** (the muscular is worth 2-3), **simple active mobilization and active resistance** (resistance can be given for equipment, weights, bands elastic strength achieved by the physical therapist or patient)
- **Static kinetic techniques**: **Isometric contraction** (the muscle strength has the value 5), muscle relaxation

Electrotherapy has been used by the following two forms:

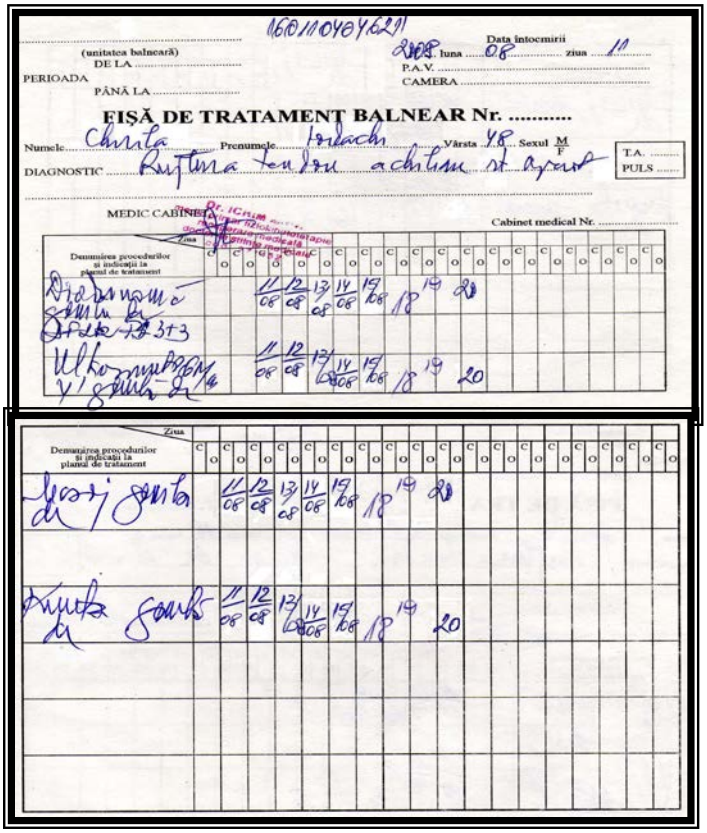
- **Low frequency current** used for increased pain threshold and inhibition of transmission of pain impulses in the brain and the effect of reducing edema, with analgesic effect by accelerating blood circulation in the treated area.
- **Ultrasound**

Frequency recovery meetings: A meeting / day for two weeks, a total of 10 sessions.

Patient's personal files

Representation results from the initial assessment and final recovery program

Treatment sheet issued by Dr. Ichim Mihai, Doctor of Medical Sciences, MD physiotherapist



FIȘĂ DE TRATAMENT BALNEAR Nr. .....

Numele Chirila Prenumele Iordachi Vârsta 48 Sexul M/F

DIAGNOSTIC Ruptura tendon ahilian st. operat

MEDIC CABINET Dr. Ichim

Cabinet medical Nr. .....

Data întocmirii 2008 luna 08 ziua 11

PERIOADA DE LA ..... PÂNĂ LA .....

P.A.V. .....

CAMERA .....

T.A. .....

PULS .....

Denumirea procedurilor și indicații la planul de tratament

Ziua

Leg image at the beginning of treatment

Leg image at the end of treatment

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Titlu: Eficienţa utilizarii "combinatiei terapeutice" masaj terapeutic - tehnici fnp-tehnici kinetice în recuperarea rupturii de tendon achilian - faza postimobilizare.

Cuvinte cheie: tendon Achilian, masaj, ruptură, tehnici FNP , tehnici kinetice.

Rezumat: Datorită faptului că acest studiu cuprinde un singur pacient concluziile acestei lucrări nu se doresc a fi general valabile, ci sunt concluziile extrase în urma cercetării efectuate.

Concluzia generală, corelativă, care se poate extrage din studiul efectual este următoarea: folosirea, "combinaţiei terapeutice" formate din masaj terapeutic, tehnici FNP şi tehnici kinetice imediat după eliminarea contenţiei gipsate, în tratamentul recuperator al rupturilor de tendon Achilian, are efecte benefice asupra evoluţiei stării pacientului, asupra prognosticului de recuperare, asupra eficienţei şi perioadei de recuperare (în sensul scurtării acesteia din urmă), scade riscul apariţiei redorilor articulare şi contribuie la creşterea durabilităţii rezultatelor pozitive obţinute, diminuă edemul de stază ce apare după imobilizarea prelungită, redă şi creşte elasticitatea musculaturii predispusă la retracturare, îmbunătăţeşte fluxul sanguin local şi mai ales întoarcerea venoasă, toate acestea având efect benefic asupra eficientizării procesului recuperator.

Titre: L'efficacité de l'utilisation des „combinaison thérapeutiques" techniques fnp – massage - techniques kinetiques dans la rupture du tendon d'achille – phase postimobilization.

Mots - clé: tendon d'Achille, rupture, massage, techniques FNP, techniques cinétique.

Résumé : Parce que cette étude comprend un patient, conclusions de cette document ne sont pas destinés à être généralement valable, mais les conclusions sont tirées des recherches menées.

La conclusion générale, la corrélation, qui peuvent être extraites à partir d'études est la suivante: l'utilisation, d'un 'traitement d'association' qui se compose de massage, les techniques des FNP et les techniques de cinétique immédiatement après l'enlèvement du dispositif de plâtre, la rééducation des rupture du tendon d'Achille a des effets bénéfiques développement de l'état du patient, le pronostic de guérison, l'efficacité et la période de récupération (dans le raccourcissement de celui-ci), diminuer le risque de raideur articulaire et contribuer à la durabilité des résultats positifs, réduit le gonflement de la stase qui survient après une immobilisation prolongée, restaurer et augmenter l'élasticité du muscle retracturare sujets, améliorer la circulation sanguine locale et le retour veineux en particulier, tous ces effets sur le processus de recouvrement plus efficace.