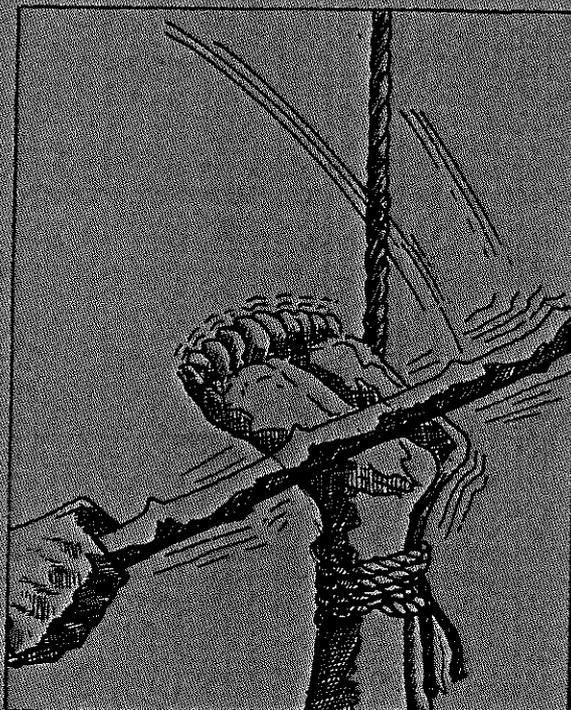


Falanga Torture

Diagnostic Considerations, Assessment and Treatment



RCT
Documentation Centre
MASTER COPY FOR
MON/2003.140

Kirstine Amris, MD, Chief Medical Officer, IRCT
Karen Friis, Chief Physiotherapist, RCT
Year 2003

International Rehabilitation Council for Torture Victims • IRCT
Borgergade 13 • P.O. Box 9049 • DK-1022 Copenhagen K • Denmark
Phone: +45 33 76 06 00 • Fax: +45 33 76 05 00 • E-mail: irct@irct.org • www.irct.org

Rehabilitation and Research Centre for Torture Victims • RCT
Borgergade 13 • P.O. Box 2107 • DK-1014 Copenhagen K • Denmark
Phone: +45 33 76 06 00 • Fax: +45 33 76 05 10 • E-mail: rrc@rct.dk • www.rct.dk

Contents

| | | |
|---|----|----|
| Falanga torture | p. | 1 |
| Symptoms and signs in the acute phase | p. | 2 |
| Symptoms in the chronic phase | p. | 2 |
| Theories explaining the persistent pain and foot dysfunction | p. | 3 |
| Reduced shock absorbency in the heel pad | p. | 3 |
| Changes in the plantar fascia | p. | 4 |
| Closed compartment syndrome | p. | 5 |
| Changed proprioception | p. | 6 |
| Neurogenic pain | p. | 6 |
| Foot and muscle dysfunctions after falanga | p. | 7 |
| Disorders of the foot | p. | 7 |
| Insufficiency of the anterior transverse arch | p. | 7 |
| Flatfoot (pes plano-valgus) | p. | 7 |
| Impaired walking | p. | 8 |
| Muscular dysfunction | p. | 8 |
| Muscle tone | p. | 8 |
| Restricted stretch range of motion | p. | 8 |
| Tender points | p. | 9 |
| Trigger points | p. | 9 |
| Active trigger points | p. | 9 |
| Latent trigger points | p. | 9 |
| Musculo-tendinous inflammation | p. | 11 |
| Inflammation of muscle-tendon attachments to bone | p. | 11 |
| Inflammation of the tendon | p. | 11 |
| Inflammation of the periosteum | p. | 11 |
| Patellar tendinitis | p. | 11 |
| Anserine tendonitis | p. | 12 |
| The ilio-tibial band syndrome | p. | 12 |
| Medial tibial stress syndrome | p. | 12 |
| Tibialis anterior tendinitis | p. | 12 |
| Tibialis posterior tendonitis | p. | 12 |
| Achilles tendinitis | p. | 12 |
| Flexor tendinitis | p. | 12 |
| Guidelines for objective examination after falanga | p. | 14 |
| Examination of soft tissues | p. | 14 |
| Heel pads | p. | 14 |
| Plantar fascia | p. | 14 |
| Cutis and subcutis | p. | 15 |
| Neurological examination | p. | 15 |
| Assessment of foot function and gait | p. | 16 |
| Assessment of gait | p. | 17 |

| | | |
|---|----|----|
| Introduction to treatment | p. | 18 |
| 1. Body Function | p. | 19 |
| Manual Treatment | p. | 19 |
| 1.1 Soft Tissue Treatment of Legs and Feet Fuscles | p. | 20 |
| 1.2 Mobilising the Joints of the Feet | p. | 24 |
| 1.3 Stretching of Muscles | p. | 27 |
| 2. Activities | p. | 29 |
| Training to Improve Postural Control and General Physical Condition | p. | 29 |
| 2.1 Balance Training, Improvement of Postural Control | p. | 30 |
| 2.2 Body Awareness Training | p. | 38 |
| 2.3 Apparatus Training | p. | 40 |
| 2.4 Individual Tailored Excercise Program | p. | 45 |
| 2.5 Individual Advice and Adjustment of Physical Aids | p. | 47 |
| 2.6 Treatment of Neurogenic Pain | p. | 51 |
| 3. Participation | p. | 54 |
| 3.1 Training in Participatory Activit | p. | 54 |
| Conclusion | p. | 55 |
| Reference List | p. | 56 |

Falanga torture

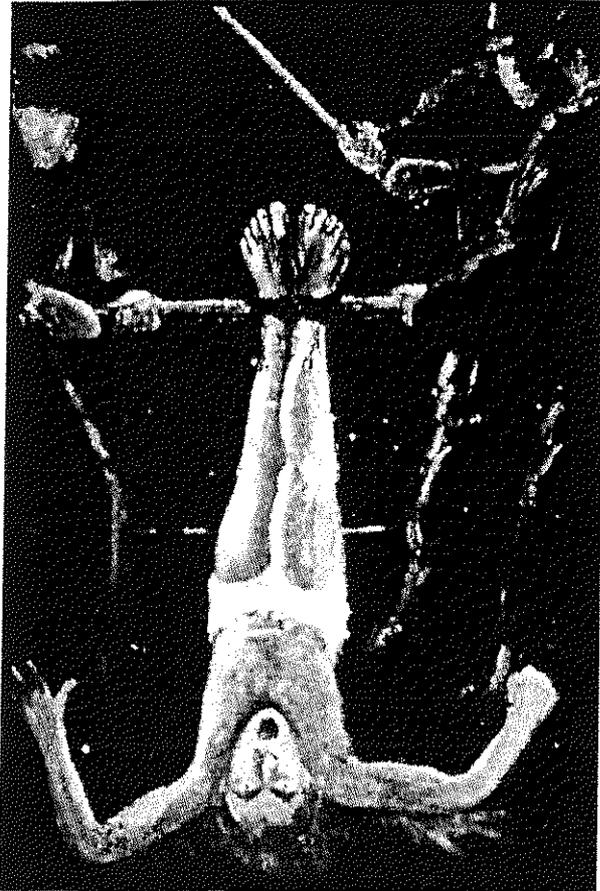


Fig. 1. Falanga suspended by the legs.

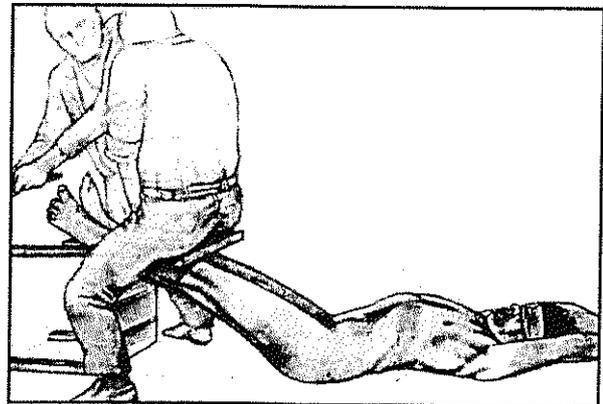


Fig. 2. Falanga with fixated legs.

Falanga (falaga, bastionade) is the term for repeated applications of blunt trauma to the soles - an ancient physical torture method, which is widely practised especially in the Middle East countries. The torture victim is beaten with wooden implements, iron bars, or other rounded instruments and is very often tied up during the torture, lying on the floor, on a table, sitting in a chair or suspended by the legs.

The victim may have the feet placed in cold water after the torture - or may be forced to walk in between or after the blows, to increase the impact of the mistreatment.

Symptoms and signs in the acute phase



Fig. 3. Acute changes. Discoloration due to haematomas in the soles.

The immediate effect of falanga is bleeding and oedema in the soft tissues of the feet with swelling, that may progress up the lower legs, and severe pain.

At clinical examination changes are confined to the soft tissues. Swelling of the feet and lower legs, discoloration of the soles due to haematoma formation and various degrees of skin lesions are typical and diagnostic findings. Extensive ulceration's and gangrene of toes due to ischaemia have been described but are not common. Fractures of tarsals, metatarsals and phalanxes are reported to occur occasionally.

The acute changes disappear spontaneously after a few weeks as the oedema and extravasation of blood resolve, but the induced soft tissue lesions may be permanent.

Symptoms in the chronic phase

The majority of torture victims who have been submitted to falanga develop a chronic pain syndrome and impaired walking.

The cardinal symptom is pain in the feet and calves. Two types of pain is usually present:

- A deep, dull cramping pain in the feet, which intensifies with weight bearing and muscle activity spreading up the lower legs.
- A superficial burning, stinging pain in the soles - spontaneous or evoked.

The pain are often accompanied by sensory disturbances; tingling, prickling sensations and frequent also a tendency for the feet to alternate between being hot and cold and for increased sweating, symptoms suggestive of autonomic instability.

Due to pain walking is impaired in most falanga victims. Walking speed and walking distance is reduced. Typically the torture victim is only able to walk a limited distance, during which the pain will increase and make continued muscle activity impossible. At rest the pain subsides and the victim can resume walking.

Other frequent complaints are feelings of tiredness and heaviness in the thighs and lower legs, pain in the knee and ankle joints, muscle cramps and lumbar pain when walking and standing.

Theories explaining the persistent pain and foot dysfunction

Reduced shock absorbency in the heel pads

The footpads are situated under the weight bearing bony structures, where in particular the heel pads act as the first in a series of shock absorbers. During heel strike a shock wave is generated and transmitted from the heel through the skeleton to the skull. It is therefore necessary to have built-in shock absorption, to reduce the impact on the bones and to protect the brain and vision from vibrations. Apart from the heel pads the arches of the foot, the knees, pelvis and intervertebral discs serves as such shock absorbers.

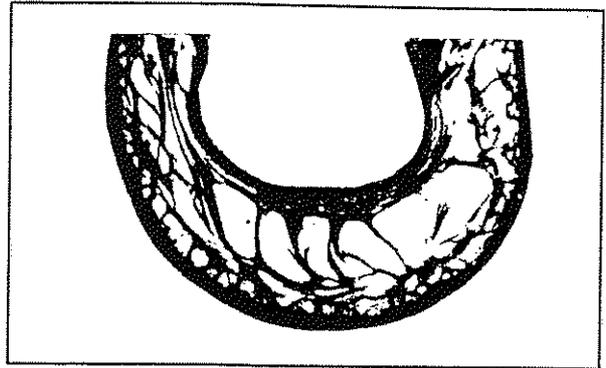


Fig. 4. (Blechshmidt, 1934) Architecture of a normal heel pad.

The heel pad is normally a firm, elastic structure covering the calcaneus. It has a complex internal architecture consisting of closely packed fat cells surrounded by septae of elastic connective tissue, which also contains the nerve and vessel supply to the tissues. Due to its structure the heel pad is under a constant hydraulic pressure and maintains its shape during weight load in the standing position.

After falanga the heel pads may appear flat and wide, with displacement of the tissues laterally during weight loading. This is observed at inspection from behind, with the torture victim in the standing position.

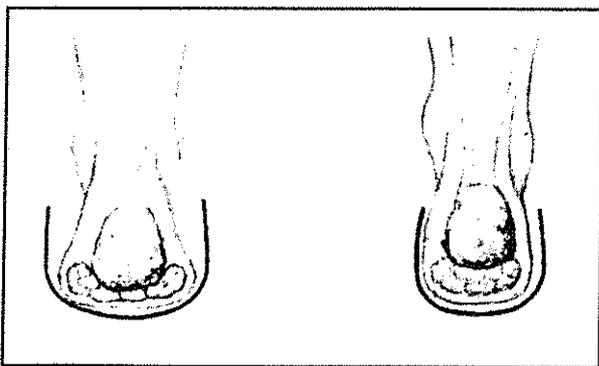


Fig. 5. A normal heel pad and a flat, wide heel pad after falanga.

At palpation the elasticity in the heel pad may be reduced and the bony structures therefore easily felt through the tissues. The heel pad is then described as severely damaged.

The pathophysiology of the reduced elasticity in the heel pad is thought to be tearing of its connective tissue septae, leading to deprivation of blood supply and secondary atrophy of fat cells. Once the architecture is destroyed it cannot be rebuilt, and the shock absorbing ability of the heel pad is lost.

Correspondingly, reduced elasticity can be found in the lateral and medial forefoot pads.

Damaged footpads are not pathognomonic of falanga, but are also described in connection with other conditions unrelated to torture. Reduced shock absorbency in the heel pads is e.g. found in long distance runners and patients with fractures of the heel bone. It should also be stressed, that normal footpads at clinical examination does not rule out exposure to falanga.

Changes in the plantar fascia

The plantar fascia springs from the calcaneum and proceeds to the forefoot. Here it gives off superficial fibres to the skin and fibres, which insert at the bases of the proximal phalanxes of the toes.

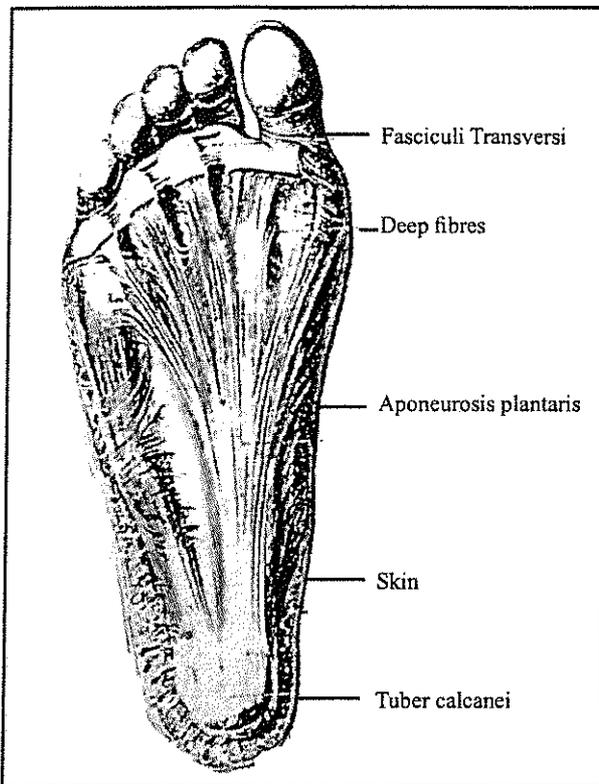


Fig. 6. Spring and insertion of the plantar fascia.

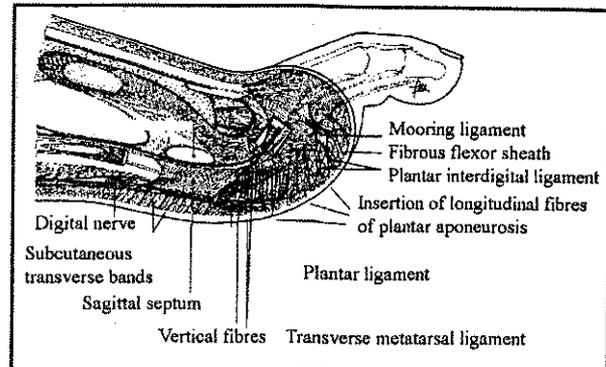


Fig. 7. Superficial and profound fibres from the plantar fascia.

The plantar fascia is tightened during walking. In this way the skin is firmly anchored to the underlying tissues and prevented from sliding during push-off and at heel strike. The fascia also supports the longitudinal arches of the foot, assisting the foot muscles.

Changes in the plantar fascia are common after falanga and are probably due to the repeated direct traumas to this superficial structure during the torture.

Plantar fasciitis, a well-known problem in long distance runners, is a condition caused by overloading of the fascia. This leads to inflammation at the attachment site on the medial tubercle of the calcaneum, eliciting pain and tenderness locally in that area.

After falanga the fascia often appears thickened with an uneven surface at palpation. Tenderness is present throughout its whole length from spring to insertion. Disruption of the plantar fascia from its distal insertion has been reported based on the finding of increased passive dorsiflexion of the toes at clinical examination.

In a MRI study comparing torture victims exposed to falanga with healthy volunteers, significant thickening involving the entire plantar fascia was found in all the victims.

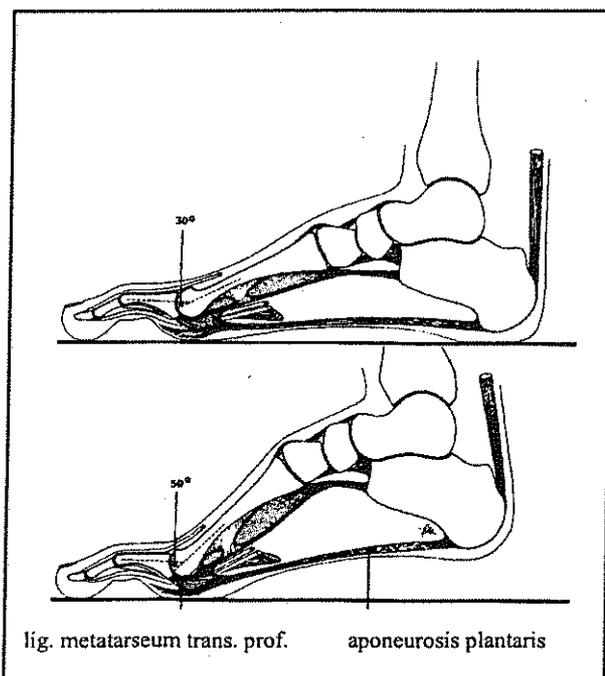


Fig. 8. Tightening of the plantar fascia at toe-off. (Modified after Hicks, 1954)

Apart from this, morphological changes were also present. Two layers of the fascia were demonstrated: a deep, thin portion with a normal homogeneous appearance and a superficial thicker portion with an inhomogeneous appearance possible representing scar tissue formation.

No signs of disruption of the fascia, closed compartment syndrome or visible changes in the heel pads were shown in this study.

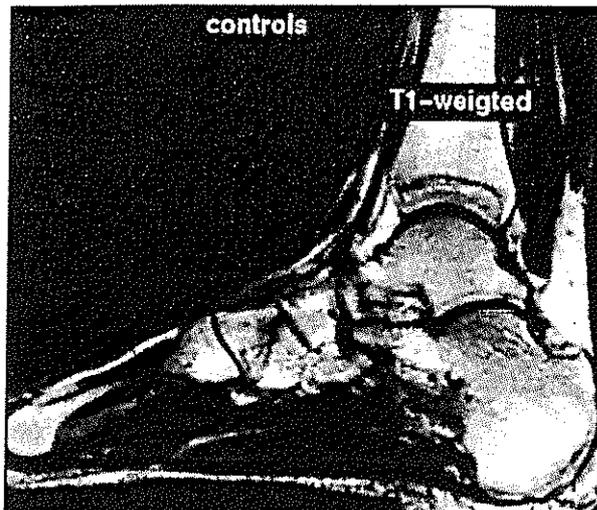


Fig. 9. MR-scan of a normal foot.

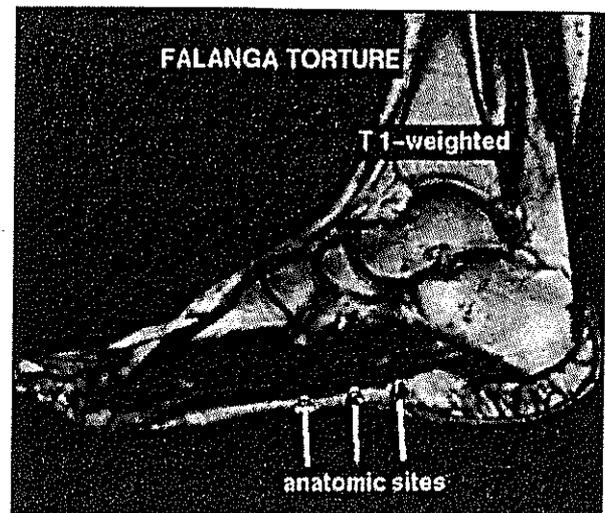


Fig. 10. MR-scan of a »falanga foot« with an uneven, thickened plantar fascia.

Closed compartment syndrome

The plantar muscles of the foot are arranged in tight compartments. A medial compartment which contains the abductor hallucis muscle and the medial portion of the hallucis brevis. A lateral compartment which contains the muscles for the fifth toe; and a central compartment with the flexor hallucis longus, adductor hallucis, flexor digitorum brevis, quadratus plantae and the flexor digitorum longus tendons with the lumbrical muscles. This anatomical arrangement makes it possible for a closed compartment syndrome to develop.

A closed compartment syndrome is defined as »a painful ischaemic, circulatory disturbance in connection with an increase in pressure and volume inside a well-defined muscle compartment with fairly unyielding walls«. It may be acute or chronic.

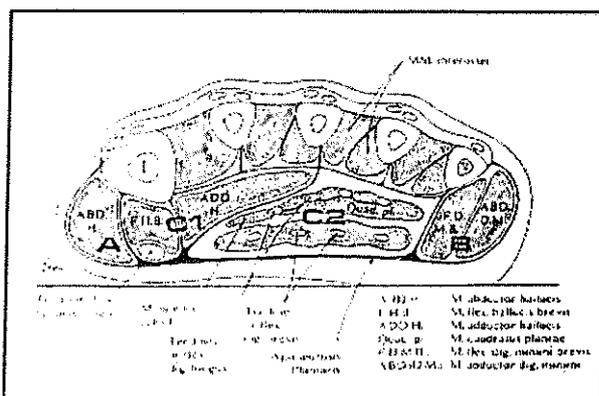


Fig. 11. The muscle compartments of the foot.

In the acute form, with a rapidly increasing pressure inside the muscle compartment e.g. caused by bleeding, the symptoms are alarming and the consequences severe, with necrosis of the involved muscles if the condition is left untreated.

Chronic compartment syndromes can occur as a result of an increase in the muscle bulk or narrowing of the compartment. At rest the muscles fill the whole compartment. During exertion, the extensive muscle capillary net-

work opens up and the resulting increase in blood flow expands the volume of the muscles. The pressure inside the muscle compartment raises causing at first an obstruction of the venous blood flow but subsequently also of the arterial flow. The resultant pain is due to lack of oxygen and tension, which gradually gets worse.

Clinically the condition presents itself with pain that intensifies with loading, and finally makes continued muscle work impossible. The pain disappears after a short period of rest, but recurs when physical activity is resumed - a clinical picture not unlike that seen in torture victims with impaired walking after falanga.

Changed proprioception

The skin of the soles in the normal foot are apart from the arch area, very thick and firmly tied to the underlying tissues. It is very rich in sensory nerve endings, which register touch and pressure. Postural reflexes are elicited from the soles. Together with the ability to register distribution of pressure, these reflexes are essential for balance and gait.

Poor fixation of the skin of the soles is found in some torture victims after falanga. On palpation the skin can then be displaced from side to side, whereas normally it should be firmly anchored. This poor fixation most likely influences the proprioception, leading to compromised balance and altered gait.

An other possible explanation is that falanga causes nerve lesion with sensory disturbances involving the feet. Poor balance and altered gait is well-described in patients with peripheral neuropathy of other causes, e.g. diabetic neuropathy.

Neurogenic pain

Neurogenic pain is pain caused by lesions or alterations in the pain signalling parts of the nervous system. Peripheral nerve lesion affecting the small nerves of the soles is a very possible consequence of falanga. Neurogenic pain due to nerve lesion is therefore a potential contributing pain mechanism after this torture method.

Clinically neurogenic pain is characterised by the lack of apparent signs of tissue damage and by a delayed onset. The pain is described in different ways - often as diffuse, burning, stinging (dysaesthesiae), and/or lancinating, following the nerve distribution (neuralgia). Neurogenic pain varies in intensity, but typically there is summation (increasing intensity by repeated stimulation) and aftersensation (persistent pain long after stimulation has ceased). In addition, there may be signs of hyperactivity of the sympathetic nervous system e.g. increased sweating, change of skin temperature, and trophic and colour changes of the skin.

A prominent feature of neurogenic pain is sensory disturbances e.g. decreased sensation (hypoesthesia), increased sensation (hyperaesthesia), decreased pain sensation (hypoalgesia), or increased pain sensation (hyperalgesia). Especially characteristic is allodynia i.e. pain caused by stimuli that do not usually evoke pain, e.g. pressure, touch, cold and heat, and dysaesthesia i. e. an unpleasant, abnormal sensation - spontaneous or evoked.

As described earlier, many of the above mentioned symptoms are typical complaints in torture victims exposed to falanga. Sensory disturbances e.g. hypoesthesia, allodynia and dysaesthesia are likewise frequent - and can be demonstrated at objective examination

Foot and muscle dysfunction after falanga

Disorders of the foot

The foot can be divided into three parts. The back, or heel, consists of the talus and the calcaneus. The middle part consists of the navicular bone, the cuboid and the three cuneiform bones, and the metatarsal bones. The front part consists of the five toes.

There are two arch systems in the foot: a transverse, anterior arch and a longitudinal arch which follow the inside of the foot from the calcaneus to the basic joint of the big toe. The front arch is held together by ligaments, which in an unloaded state maintain the shape of the arch and in a loaded state are stretched, as the arch is pressed against the surface.

The normal foot has a central positioned heel bone, extended mobile toes and load distribution in 3 regions: capitulum of 1st metatarsal bone, capitulum of 5th metatarsal bone and the calcaneus.

Many movements of the foot and toes are controlled by muscles, which have their origins in the lower leg and whose tendons are attached to the foot. Movements of more precision are controlled by muscles, which have both their origins and insertions in the foot itself.

Changes in the normal anatomical structure of the foot and an impaired function of the foot are common after falanga torture:

- **Insufficiency of the anterior transverse arch (forefoot flatfoot):** the normal function of the anterior transverse arch is considered to be the provision of elasticity. If a slacking of the ligaments between the metatarsal bones occurs, the arch loses its arched shape and load-absorbing ability. The foot becomes broader and the metatarsal bones as well as the toes acquire a fan-like spread.

Pain may be present, when the anterior transverse arch is loaded. Calluses from under the ball of the foot may appear as a result of the skin being exposed to increased pressure.

- **Flatfoot (pes plano-valgus):** flat-footedness is defined as a loss of the longitudinal arch on the medial side with prominence of the navicular and the head of the talus. The calcaneus is in valgus position. Distinction is made between: 1) the flexible flatfoot, characterised by restoration of the medial arch in toe-standing and 2) the rigid flatfoot, where the medial arch is not restored.

Flat-footedness may lead to an increased load on the whole of the lower extremity since it results in an increased inward rotation of the lower leg. This in turn leads to a change of the biomechanical work pattern of the thigh muscles subjecting the lower leg, the knee joint and the hip joint to an increased load. Flat-footedness may therefore be the cause of overuse injuries and other painful conditions in these areas.

Impaired walking

Walking is a complex function encompassing many elements, all of which must function optimal and in coordinated manner.

Under normal circumstances the foot is placed on the surface with the outside of the heel touching the ground first. The load hereafter passes gradually forward along the lateral edge of the foot towards the metatarsophalangeal joint of the 5th toe, transverse the forefoot towards the metatarsophalangeal joint of the 1st toe with unwinding over this toe, the basic joint being maximally extended at take-off.

The gait should be flowing and rhythmic with a stride of approximately 35-41 cm. An accompanying swing of the upper extremities should be present, in an opposite rhythm as compared to that of the lower extremities.

Deviations from the normal gait pattern are a very frequent after exposure to falanga. Many torture victims develop a compensatory altered gait with loading of the lateral border (supinating the foot) or loading of the medial border (hyperpronating the foot) to avoid pain at heel strike. The unwinding of the foot is likewise abnormal. Maximal extension of the big toes basic joint and weight loading of the capitulum of the 1st metatarsal bone is avoided at take-off.

Stride and walking speed is reduced. The gait is broad, stiff and insecure as seen in patients with peripheral neuropathy of other causes.

As with foot deformities - alterations in the gait pattern may cause overload of the joints and muscle-tendon apparatus in the lower legs.

Muscular dysfunction

As a consequence of the altered function of the foot, abnormal gait, and very frequently concurrent exposure to other torture methods involving the lower extremities a chain reaction of muscular imbalance may occur. The various muscle groups of the lower legs are often painful due to increased muscle tone, short muscles, tight fasciae and development of tender points, trigger points and musculo-tendinous inflammation.

- **Muscle tone:** applying a digital pressure to a muscle, resistance in the tissue opposing deformation occurs. Variations in this resistance is referred to as muscle tone or muscle tension and is described in a continuum from high (hypertone) to low (hypotone). Several causes may lead to deviations in muscle tone and traditionally these are grouped in three main categories: 1) organic determined e.g. neurological disorder, 2) mechanically determined e.g. overload, 3) psychological determined e.g. prolonged stress conditions.
- **Restricted stretch range of motion (short muscles):** a normal muscle can be stretched to its full length with a springy, elastic resistance at the end of range. Stretching of a short, tight muscle evokes pain and causes - depending on the muscles involved - reduced range of movement in the corresponding joint. Restricted range of movement in muscles can be caused by: 1) sustained activation of the contractile mechanism of the muscle fibres e.g. painful trigger points or 2) reduced elasticity in the passive tissues components e. g. shortening due to fibrosis (muscle contracture).

- **Tender point:** a hyperirritable spot in a muscle, that is painful on compression. Tender points are to be distinguished from trigger points.
- **Trigger point:** a hyperirritable spot in a muscle or its fascia, that is painful on compression and gives rise to a characteristic pattern of referred pain. A trigger point may be active or latent.
- **Active trigger point:** a myofascial trigger point, which is symptomatic with respect to pain; it refers a pattern of pain at rest and/or at activity that is specific for the muscle. An active trigger point is always tender, prevents full lengthening of the muscle and usually refers pain to a remote location on compression.
- **Latent trigger point:** a myofascial trigger point, that is clinically silent with respect to spontaneous pain and painful only when palpated. Aside from this, a latent trigger point may show all the other clinical characteristics of an active trigger point. A latent trigger point may persist for years after an apparent recovery from an injury. It predisposes to acute attacks of pain since minor overstretching, overuse or chilling of the muscle may reactivate it.

After falanga active trigger points are often present in the muscles of the lower extremities and at clinical examination, there will be typical findings:

- Passive or active stretching of the muscle increases pain.
- The stretch range of motion is restricted.
- Pain is increased, when the affected muscle is contracted against fixed resistance.
- The maximum contractile force of the affected muscle is weakened.
- Muscle in the immediate vicinity feels tense at palpation.
- The trigger point is found in a palpable band as a sharply circumscribed spot of exquisite tenderness.
- Deep tenderness and dysaesthesia are commonly referred by active trigger points to the zone of referred pain.
- Moderate, sustained pressure on a sufficiently irritable trigger point causes and intensifies pain in the reference zone.
- Digital pressure applied to an active trigger point usually elicits a »jump sign« i.e. general pain response in the patient.
- Snapping palpation of the trigger point evokes a local »twitch response« i.e. transitory contraction of the group of muscle fibres that contains the trigger point.

Torture victims exposed to falanga should be carefully examined, in order to detect active trigger points in the muscles of the lower legs. Many of these trigger points refer pain, tenderness and sensory disturbances to the feet. Pain in the feet can therefore not always be ascribed local pathology.

Trigger points have a remarkably constant localisation and the zone of the referred pain is reproducible and related to the site of origin. It is therefore important to know where to find them and to be familiar with their characteristic pain patterns. Some of the most frequent active trigger points and their zone of referred pain are illustrated in the following figures:

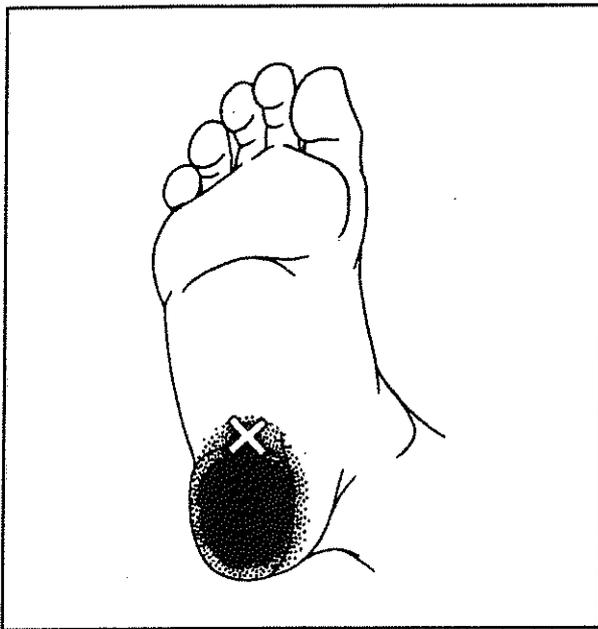


Fig. 12. Pain pattern referred from a trigger point in quadratus plantae muscle. (Travell, Simons)

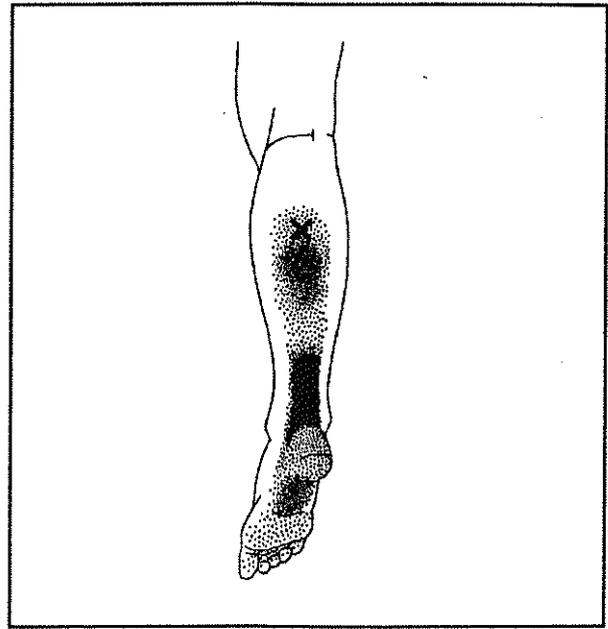


Fig. 13. Pain pattern referred from a trigger point in the tibialis posterior muscle. (Travell, Simons)

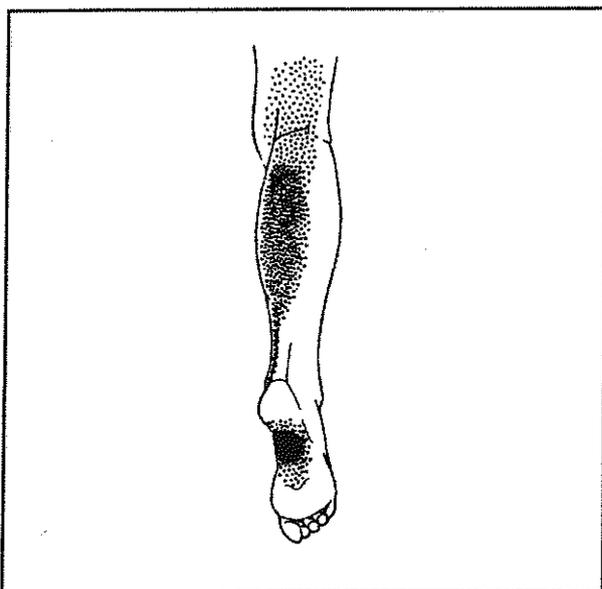


Fig. 14. Pain referred from a trigger point in the gastrocnemius muscle. (Travell, Simons)

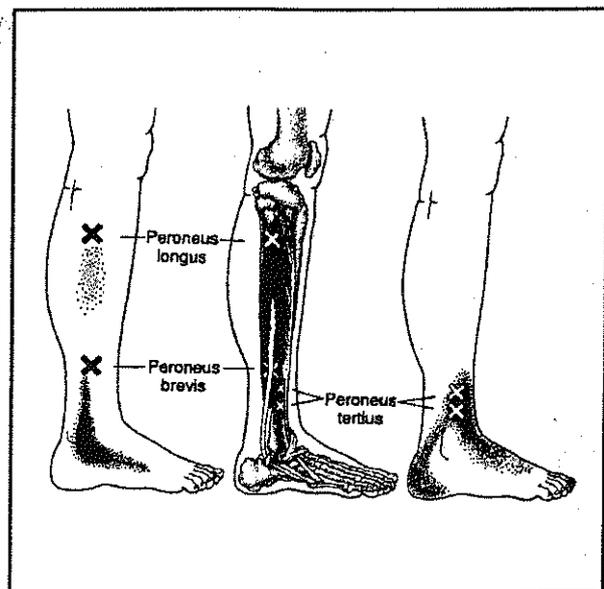


Fig. 15. Pain referred from trigger points in the peroneal muscles. (Travell, Simons)

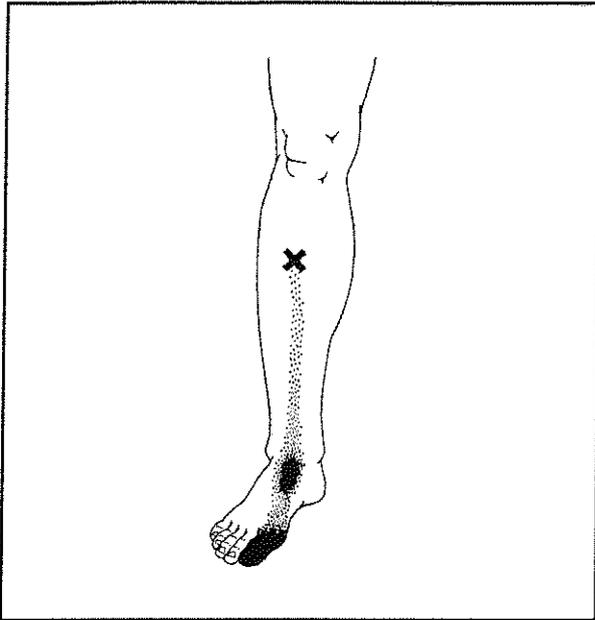


Fig. 16. Pain referred from a trigger point in the tibialis anterior muscle. (Travell, Simons)

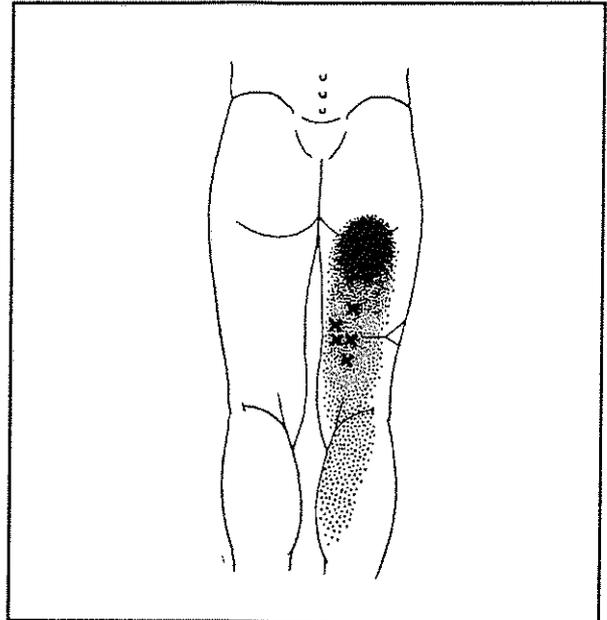


Fig. 17. Pain referred from a trigger point in the biceps femoris muscle. (Travell, Simons)

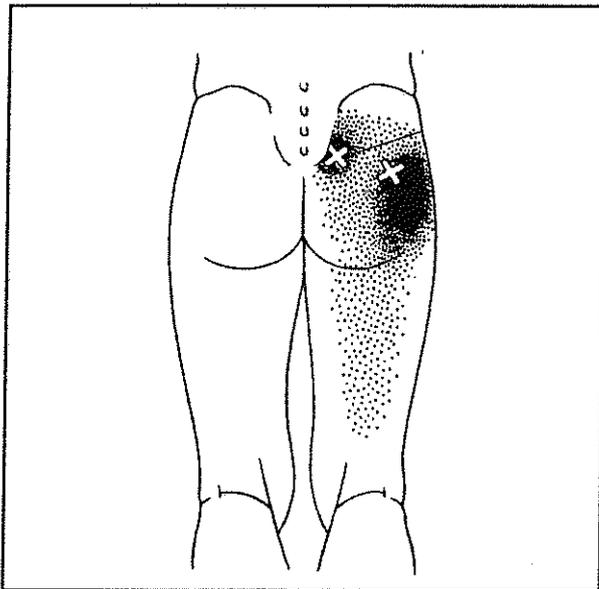


Fig. 18. Pain referred from a trigger point in the piriformis muscle.

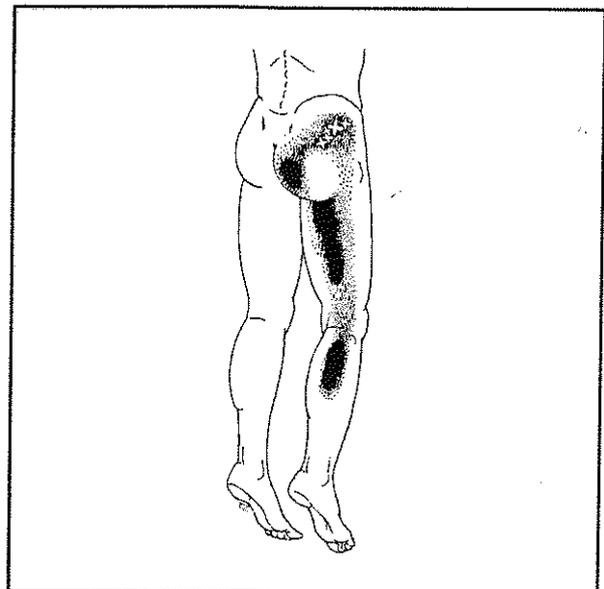


Fig. 19. Pain referred from a trigger point in the gluteus minimus muscle.

Musculo-tendinous inflammation

Inflammation represents the body's response to tissue injury caused by pressure, friction, repeated load or overload and external trauma. Whatever the nature of the underlying cause, the inflammatory response leads to impaired and painful mobility of the affected part. Inflammatory reactions in the musculo-skeletal system may occur in tendons, tendon and muscle attachments, bursae and the periosteum.

- **Inflammation of muscle-tendon attachments to bone:** attachments of muscle to bone involves a gradual transition from muscle-tendon to cartilage and from mineralised cartilage to bone. Bone-tendon junctions are poorly supplied with blood and this may explain why these injuries often take a long time to heal and often become chronic.

Inflammation of the muscle-tendon attachment is caused by repeated strain on the attachment and periosteum. The resultant minor ruptures and bleeding causes irritation and inflammation.

Tenoperiostitis is characterised by: pain at the attachment site of a muscle or tendon to bone; slight swelling and some degree of impaired function; distinct, localised tenderness to pressure over the affected attachment; and an increase of pain at the site of attachment, when the muscle group concerned is contracted.

- **Inflammation of the tendon (tendinitis):** an inflammatory reaction in a tendon or its sheath may be initiated by repetitive, one-sided movements or persistent mechanical irritation. The condition frequently becomes chronic.

Tendinitis and peritendinitis causes pain and impaired function. Swelling and crepitus may be present in the acute stages.

- **Inflammation of the periosteum (periostitis):** periostitis of the lower leg is a common condition in athletes. Any athlete who trains intensively on a hard surface may be affected e.g. runners. Insufficiency of the anterior transverse arch and increased pronation may be contributing factors.

Periostitis should be suspected if pain is elicited on the inside of the shine at activity and local tenderness along the medial, anterior edge of the shine is present.

Musculo-tendinous inflammation especially around the knee and in the ankle region is frequent after falanga.

- **Patellar tendinitis:** the patellar tendon runs between the patella and the tibial tuberosity. Pain and tenderness is present over the tendon, often at its point of attachment to the lower pole of patella. Pain is triggered if the quadriceps is contracted.
- **Anserine tendinitis:** the pes anserinus is composed of the conjoined tendons of the sartorius, gracilis, and semitendinosus muscles. Anserine tendinitis produces pain and tenderness over the medial aspect of the knee, just below the joint margin.

- **The ilio-tibial band syndrome (runners knee):** »runners knee« is the everyday name of a painful condition, which is located in the lateral side of the knee joint over the epicondyle of the femur. Pain and local tenderness is present over the lateral femur condyle where the ilio-tibial band at knee flexion and extension slides across the condyle causing local inflammation. Often there are signs of increased foot pronation.
- **Medial tibial stress syndrome (shin splint):** periostitis of the medial margin of the tibia is to be suspected if tenderness is present over the distal margin of the tibia. The pain is especially pronounced over the lower half of the bone. The pain ceases at rest but returns on renewed loading. Pain is triggered by plantar flexion in ankle and toes.
- **Tibialis anterior tendinitis:** the tendon of the tibialis anterior muscle runs down the front of the lower leg and across the ankle joint. The tendon can become inflamed in any part of its course. Pain is triggered by dorsiflexion in the ankle joint. Tenderness occur over the course of the tendon. Swelling and crepitus may be present in acute stages.
- **Tibialis posterior tendinitis:** the tibialis posterior muscle arises from the back of the tibia and the fibula and emerges into a tendon enclosed in a sheath, which runs behind the tibia and medial malleolus and attaches to the navicular bone on the inside of the foot. Increased pronation of the foot results in increased load and tension on the tendon or its insertion leading to inflammation.

Pain is triggered when the tendon is subjected to passive loading and active exercise. Tenderness occur over the attachment to the navicular bone and over the course of the tendon behind the medial malleolus. Swelling and crepitus may be present in acute stages.

- **Achilles tendinitis:** pain, swelling and tenderness occur over the tendon, its attachment and in the area proximal to the attachment. Pain is triggered by dorsiflexion in the ankle joint.
- **Flexor tendinitis:** the tendons which dorsiflex the toes run along the dorsum of the foot and merge with muscles, which are attached to the anterior aspect of the tibia. If flexor tendinitis is present, pain is located on the top of the foot with tenderness along the course of the tendons.

If tenoperiostitis or tendinitis are suspected the clinical assessment should, a side from a palpatory examination, include an isometric testing. Isometric testing is a stress-test, which strains the involved tendon during isometric contraction of the corresponding muscle. The test is positive, if a distinct, localised pain is evoked at the site of attachment.

Guidelines for objective examination after falanga

At RCT, the clinical assessment of torture victims submitted to falanga includes a specific examination of the feet. The examination is divided into three sections: 1) examination of the soft tissues, 2) neurological examination, and 3) assessment of the function of the foot and gait. Written guidelines for the examination have been developed.

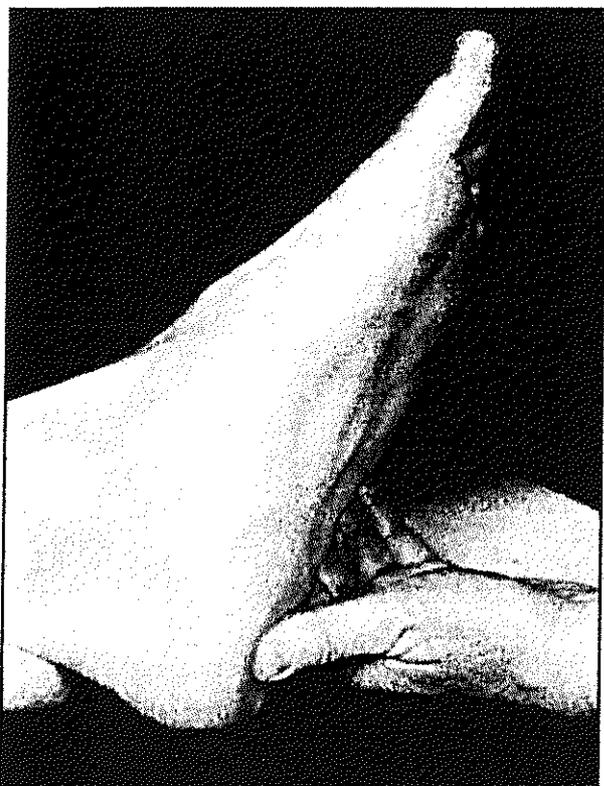


Fig. 20. Palpation of the heel pad.

heel pad is normal, slight to moderately reduced or severely reduced with immediate bony contact through the tissue. Furthermore, tenderness at palpation is registered if present.

- **Plantar fascia:**

Palpation: The client supine. The examiner passively tensions the plantar fascia with one hand by dorsal flexing the 1st to 3rd toe. With the fingers of the other hand the entire plantar fascia, from its spring on the tuberosity of the calcaneus to its insertion on the proximal phalanxes, is palpated. It is registered if the fascia appears thickened with an uneven surface and if tenderness is present at palpation at the spring, the insertion and/or diffusely involving the entire fascia.

1) Examination of soft tissues

- **Heel pads:**

Inspection: with the client standing, the heel pads are inspected from behind. It is registered if the heel pads appear flat and wide with displacement of the tissues laterally during weight loading.

Palpation: The client supine. The examiner stabilises the calcaneus with one hand, and applies a light pressure with the fingers of the other hand over the tuberosity of the calcaneus. It is registered, if the elasticity in the

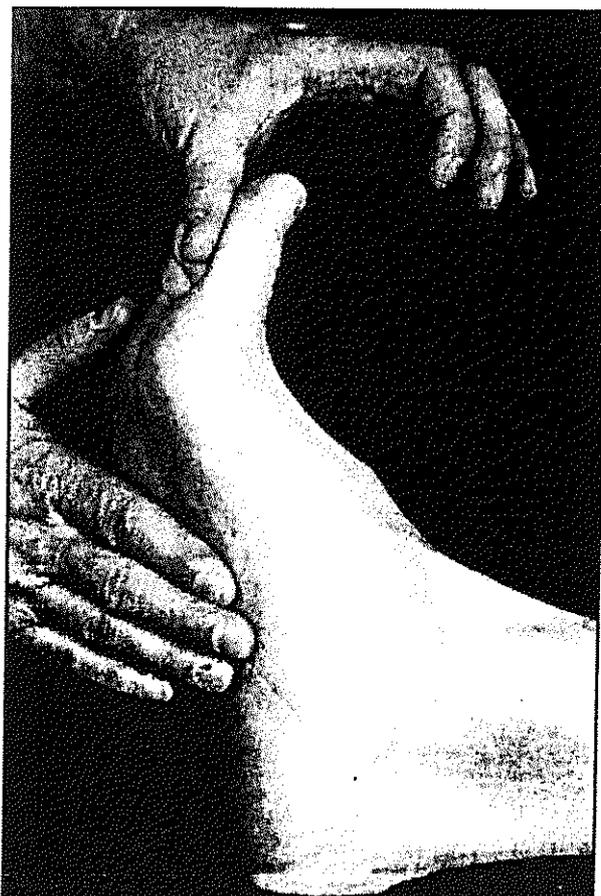


Fig. 21. Palpation of the plantar fascia.

- **Cutis and subcutis:**

Inspection: The client supine. The skin of the soles is inspected and it is registered if cicatrices are present.

Palpation: The client supine. The examiner passively tensions the plantar fascia with one hand by dorsal flexing the 1st to 3rd toe. A light pressure is applied in the mid-foot just in front of the heel bone with the fingers of the other hand and the skin and subcutis is tried displaced forward and backwards in the sagittal plane. It is registered if the tissues appear firmly anchored or loosened, being abnormal displaceable over the underlying fascia.

2) Neurological examination

The client supine. The soles, the dorsum of the foot, the posterior region of the heels and lateral and medial borders of the foot are examined.

- Light touch is examined with a cotton swab that gently touches the skin. A comparison with the sensibility on the other side is made and eventually with more proximal skin areas.
- Ability to distinguish blunt from pinprick is examined with a needle and a blunt object. It is registered if the client is able to distinguish between blunt and pinprick with the eyes closed.
- Thermal sensation is examined with the forks on a tuning fork, where one fork is heated in the palm of the hand and the other has normal room temperature. It is registered if the client with his eyes closed can distinguish the hot fork from the cold fork, when it touches the skin.
- Dysesthesia is defined as »an unpleasant abnormal sensation, spontaneous or provoked«. It is registered if a light touch of the skin is perceived as unpleasant.
- Allodynia is defined as »pain provoked by a stimulus, which does not normally evoke pain«. It is registered if light touch or light pressure is inducing pain.
- Vibration sensation is tested with a tuning fork placed at the medial malleolus and at the pulp of the 1. toe. It is registered if the client can feel the vibrations from the tuning fork at the mentioned levels.
- Two-points discrimination is examined with a pair of compasses where the distance between the legs of the compasses are adjusted to the desired mm. The skin of the soles and the dorsum of the foot are examined. It is registered whether touching with the legs of the pair of compasses are acknowledged as two points at distances <5mm, between 5 and 10mm or >10mm. The client is asked to close his eyes during the examination.

Sensory disturbances, if present, are marked on a drawing of the feet.

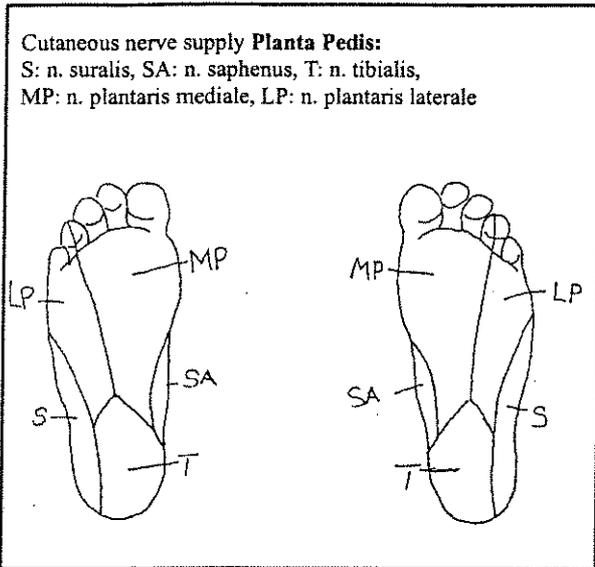


Fig. 22. *Planta pedis*, sensory disturbances are marked with relevant signs.

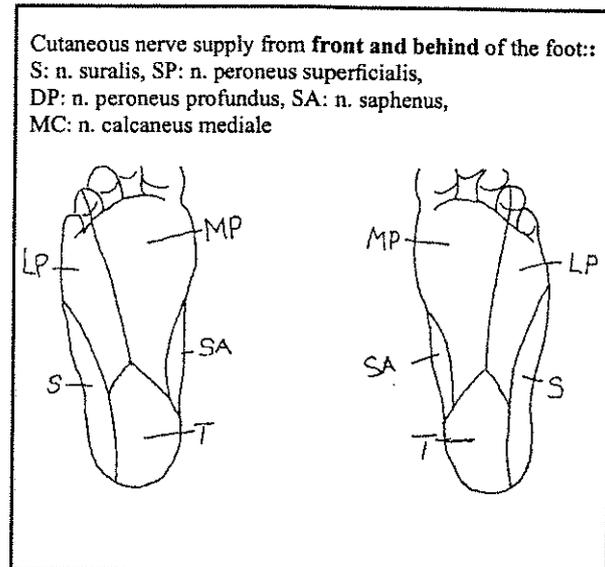


Fig. 23. *Foot from the front and behind*, sensory disturbances are marked with relevant signs.



Fig. 24. *Valgus position of the heel*.

3) Assessment of the function of the foot and gait

Inspection: The feet are inspected from behind, from the front and from the sides with the client standing.

The following is registered:

- **The position of the heel bone** as assessed from behind. 5°-10° valgus position is within normal limits.

- **Flat foot** (Pes plano-valgus) defined as flattening and lowering of the medial, longitudinal arch with the medial arch being in contact with the surface in the standing weight bearing position. Distinction is made between: 1) the flexible flat foot, characterised by a restoration of the medial arch standing on the toes and 2) the rigid flat foot, where the medial arch is not restored in toe-standing.
- **Forefoot flatfoot** (Pes transverso-planus) defined as a flattening and lowering of the anterior, transverse arch, with load distribution on the medial metatarsal heads rather than normal on the 1st and 5th metatarsal heads. Due to the lowering of the anterior transverse arch a simultaneous spreading of the metatarsal bones occur and the forefoot therefore appears wide and flat.
- Whether the client is capable of standing on his heels and toes. If problems keeping the balance, slight support is allowed.

Assessment of gait:

Inspection: The client is inspected from behind, from the front and from the sides during walking and in particular the unwinding of the foot and compensatory gait patterns if any is noticed.

The following is registered:

- If a compensatory gait pattern is present with loading of the lateral border, supinating the foot.
- If a compensatory gait pattern is present with loading of the medial border, pronating the foot.
- If the unwinding over the 1st toe is normal with maximal extension in the metatarsophalangeal joint and weight loading of the head of the 1st metatarsal bone or if weight loading of the 1st toe is avoided throughout the whole gait cycle.
- If the client is capable of walking on his toes, heels, lateral and medial border of the foot.

The following is measured:

- **Crus circumference** on both legs, 10 cm below the lower patella edge.
- **Femur circumference** on both legs, 10 cm above the upper patella edge.
- **Walking distance** measured on a tread mill as the maximal distance in metres the client can walk before pain in the feet and/or lower legs prevents further muscle activity.

Introduction to treatment

The symptoms and signs after falanga are often complex. Multiple muscles and joint dysfunction, impaired and painful gait and a general poor physical condition form a typical pattern, which emerges on the assessment. The therapist should carefully explain the results of the physical examination and work out a treatment plan – a “contract” – with the client. The treatment plan renders responsibilities for the therapist and the client and should be written down to maintain the agreement.

The treatment plan should focus on 3 parts, defined in WHO’s Classification of Functioning, Disability and Health.

1. **Body function:** The treatment includes soft tissue treatment, mobilising of joints and stretching of muscles.
2. **Activities:** The treatment includes training in postural control and body awareness, fitness training to improve physical condition. Cognitive behavioural training in relation to pain and treatment of neurogenic pain.
3. **Participation:** The treatment includes activities where the clients participate in groups and are guided to participate in community activities

All treatment and training should be adapted and adjusted to the context and environmental factors.

At RCT the following treatment methods - paced and adjusted to the requirement of the torture victim - are used:

- Treatment of soft tissues in the lower legs and feet
- Mobilising of joints in the foot and ankle
- Strengthening and stretching of muscles in the lower legs and the foot
- Exercises to improve circulation
- Balance training
- Training in walking
- Improvement of general physical function and body awareness
- Individual aids to reduce pain
- Self-management of pain
- Encourage the client to join in participatory activities

In the following chapter a variety of treatment methods are described. These methods are not complete and should be regarded as inspiration – not as a recipe. The therapist should use the best possible evidence based practice, adopt and adapt new methods and at the same time be innovative and creative.

There are some basic principles, which the therapist should consider in the treatment of torture victims. Imprisonment – torture – escape and asylum in another country have often had many personal consequences. Distrust and apprehension have often overtaken the basic trust in other people. The therapist must therefore show empathy, create an atmosphere of mutual respect and trust, and encourage the torture victims to take an active part in the treatment. Humour and spontaneity, when the situation allows it, create a relaxed and lively atmosphere. An open dialogue and good communication are prerequisite for a successful treatment. An interpreter must facilitate this communication and act as a cultural mediator.

1. Bodyfunction

Manual treatment

The touch of hands and body contact are important elements in the manual treatment. The PT must be aware of how and where to touch. The history has often given a picture of the pain quality, pain intensity and extent of the pain, all of which should be used as guidelines. A gentle, but reassuring, confident hold will often feel more safe and acceptable than a loose one.

Various forms of hands-on treatment may be used e.g. effleurage, kneading, myofascial release, acupressure and mobilising of joints in the feet. The aim of applying these methods is to provide a certain amount of pain relief and relaxation, and for the therapist to receive information about tissue and pain response. They are superb as a preliminary for a more active treatment. The methods are also excellent means for pure communication through the body and to create an atmosphere of trust and confidence. The physiotherapist has a continuous dialogue with the client who often spontaneously tells about his experience and the pain from when he was tortured. All this information helps to form a picture of the pain pattern and the client's own perception of his body and should be integrated in the treatment.

In some cases the client suffers from hyperalgesia and allodynia. Massage increases the pain condition, which may last for hours or days. Massage should therefore be avoided.

1.1 Soft tissue treatment of legs and feet muscles

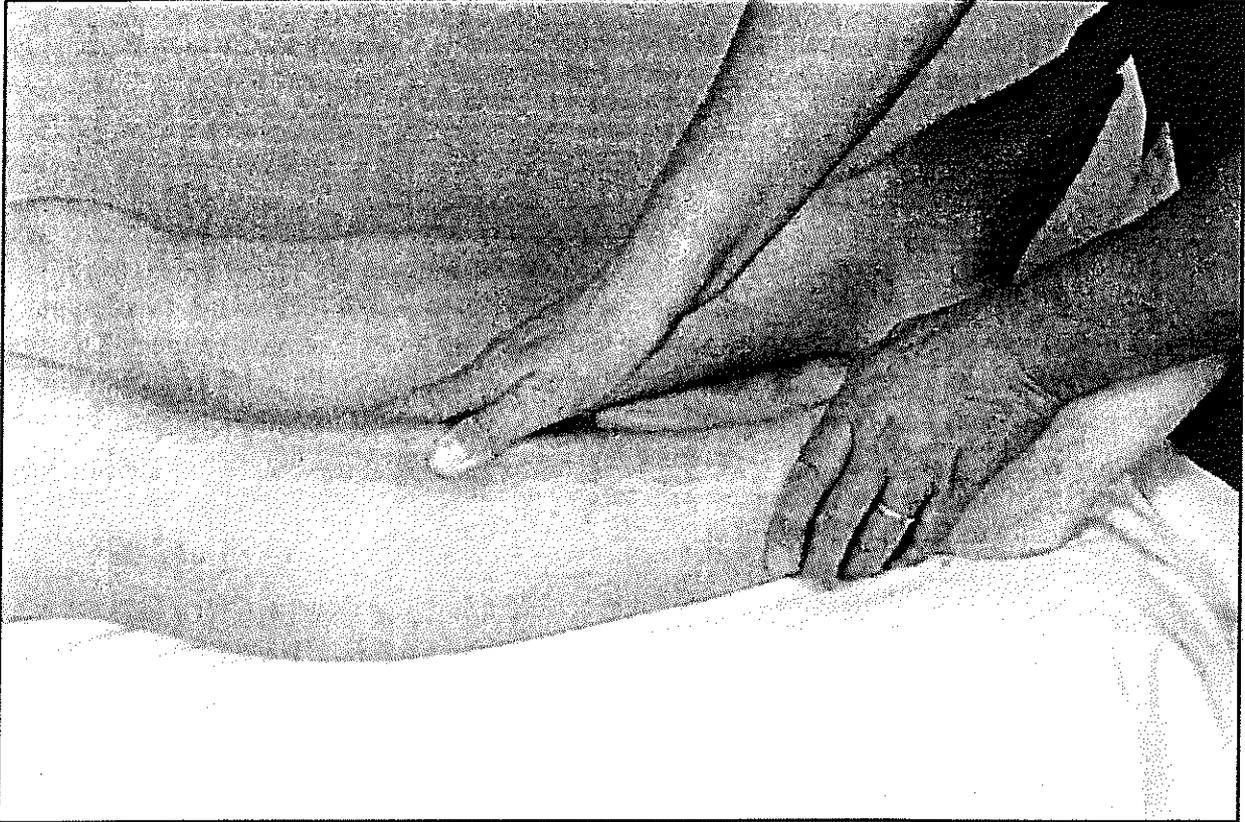


Fig. 25. Soft tissue treatment of the tibialis anterior muscle.

Purpose: To reduce neuro-muscular tension and improve muscle function.

Procedure: Palpate the trigger point in the muscle belly. Apply gentle pressure and stretch the muscle fibres with the tip of the thumb, supporting the leg with the other hand.

Outcome: Reduction of muscle tone and pain reduction.

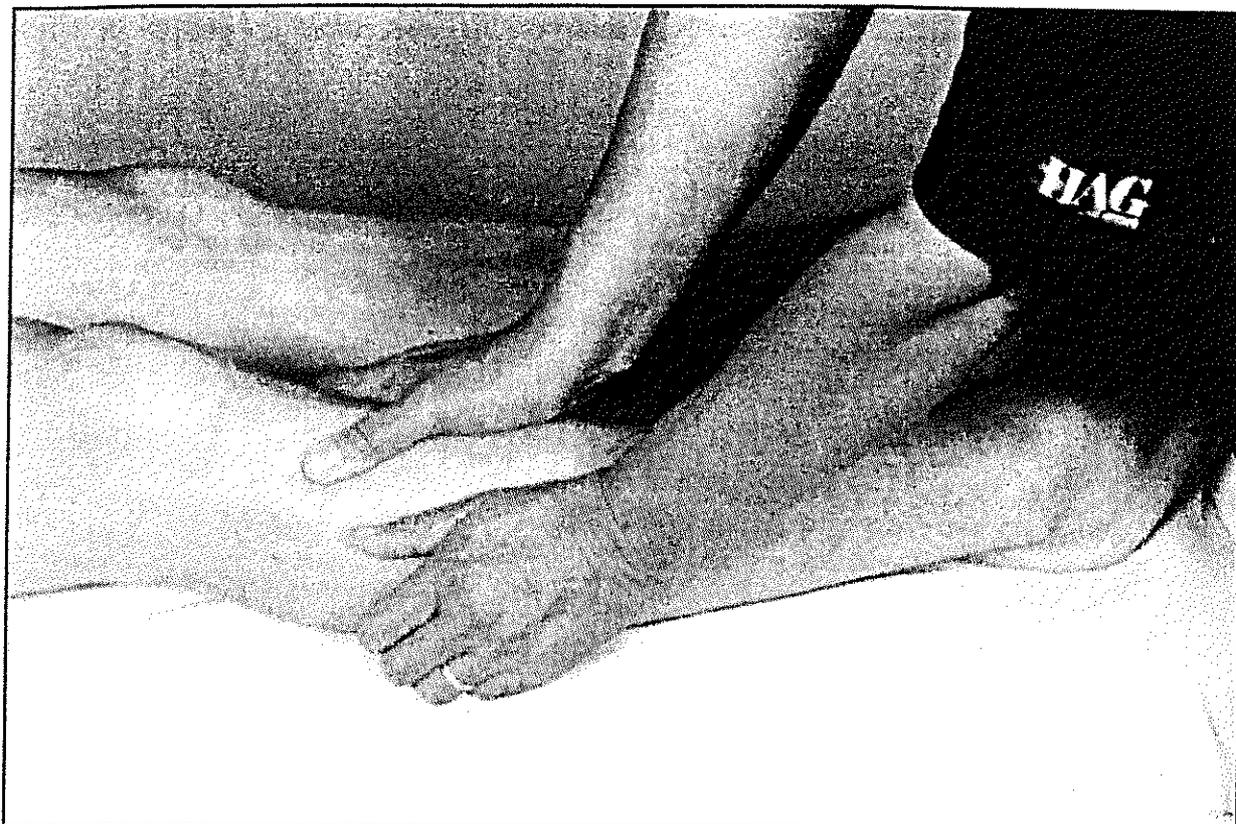


Fig. 26. Soft tissue treatment of the peroneus longus muscle.

Purpose: To reduce neuro-muscular tension and improve muscle function.

Procedure: With a reassuring firm grip the PT holds the lateral side of the tibia with the thenar of one hand. The other hand on the peroneal muscles, both thumbs parallel. While holding a slight pressure with both hands and at the same time moving away from each other, the myofascial tissue is stretched.

Outcome: Release of tightness in the fascia and pain reduction.

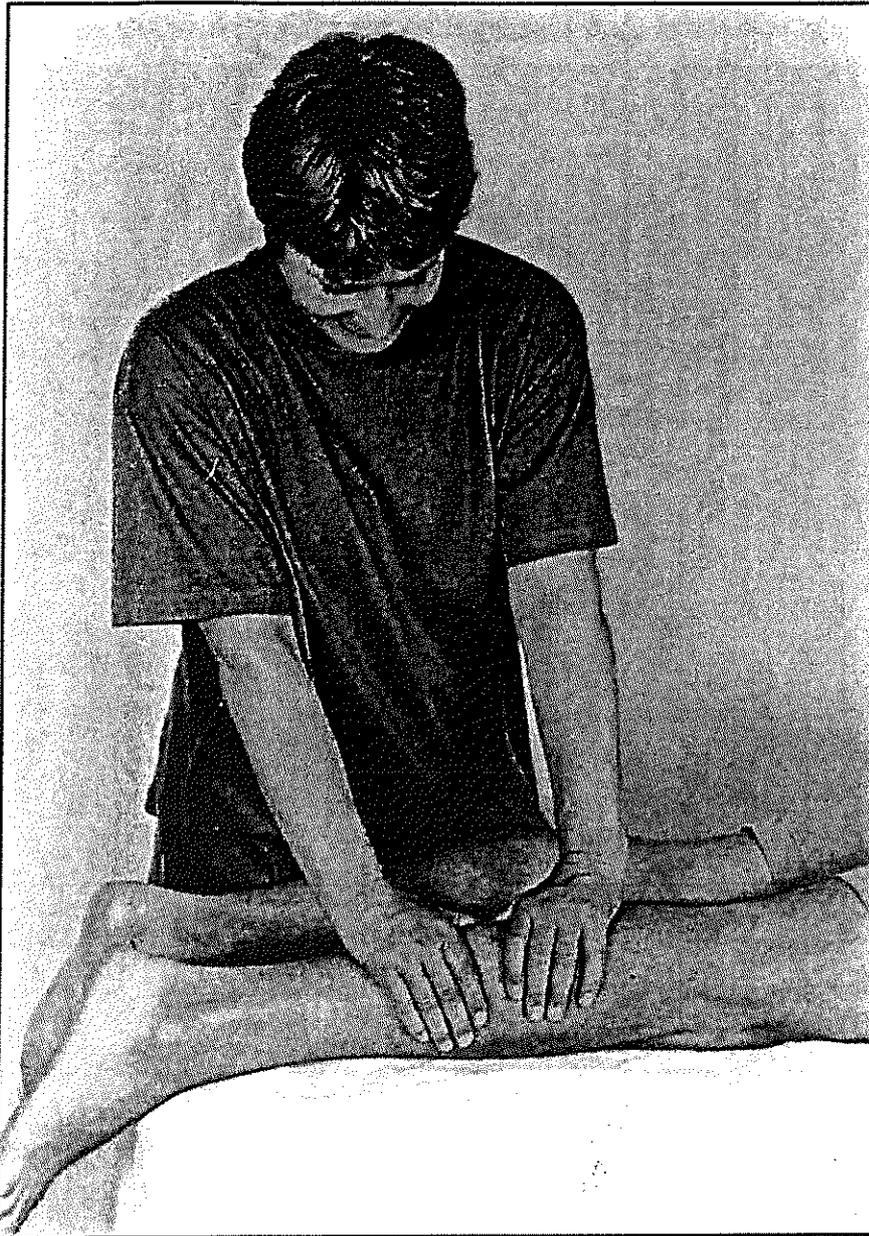


Fig. 27. Soft tissue treatment of the gastrocnemius muscle.

Purpose: To reduce neuro-muscular tension and improve muscle function

Procedure: With a firm flat pressure both hands hold across the muscle. The myofascial tissue is stretched when one hand moves away and the other towards the PT.

Outcome: Release of tightness in the fascia and pain reduction.

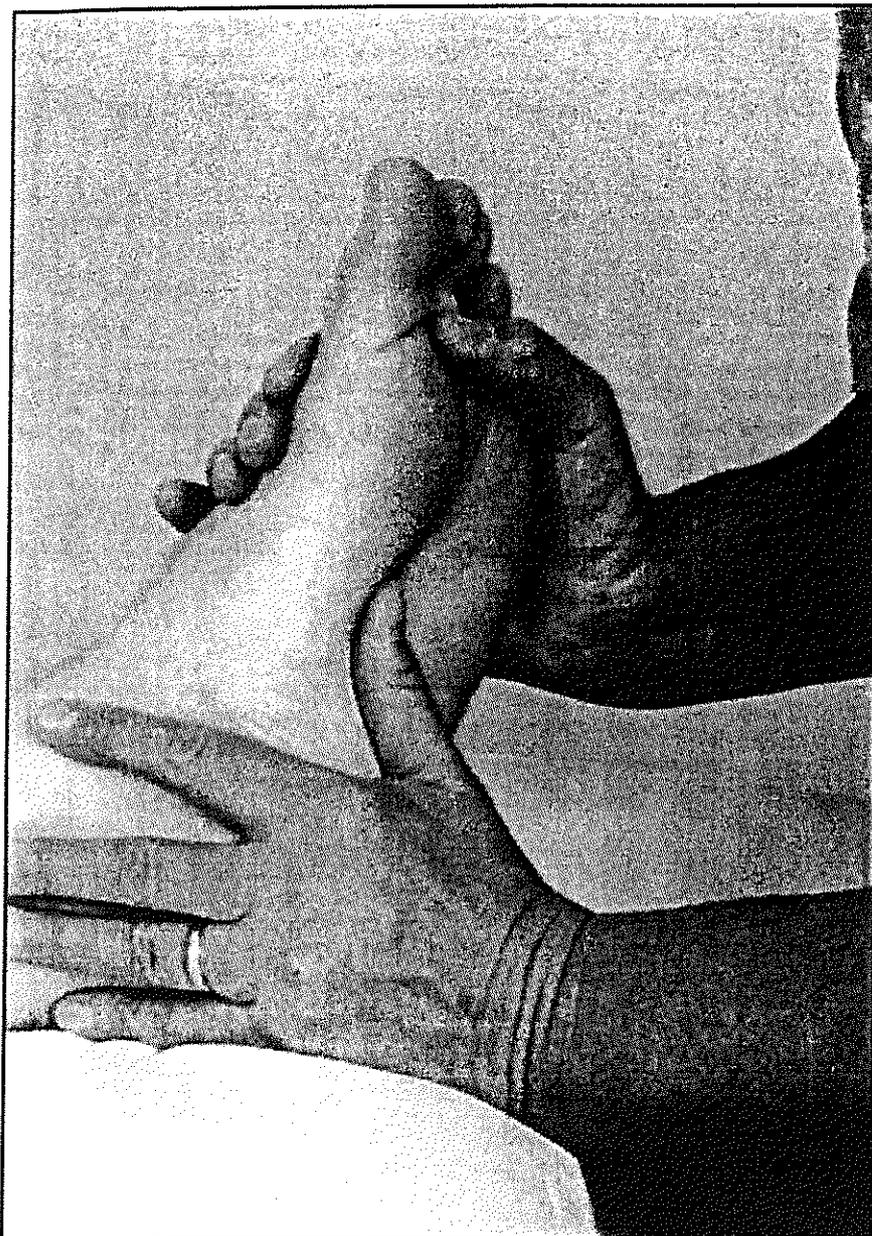


Fig. 28. Soft tissue treatment of the fascia plantaris and m. quadratus planta.

Purpose: To reduce neuromuscular tension and improve muscle function.

Procedure: One hand supports the forefoot. With the thumb of the other hand scar tissue of the fascia is stretched.

Outcome: Release of tightness in the fascia and pain reduction.

The same hold is used for treatment of the m. quadratus planta. Palpation and gentle pressure identify the triggerpoint. Apply a gentle stretch.

Outcome: Reduction of muscle tone and pain relief.

1.2 Mobilising the joints of the feet

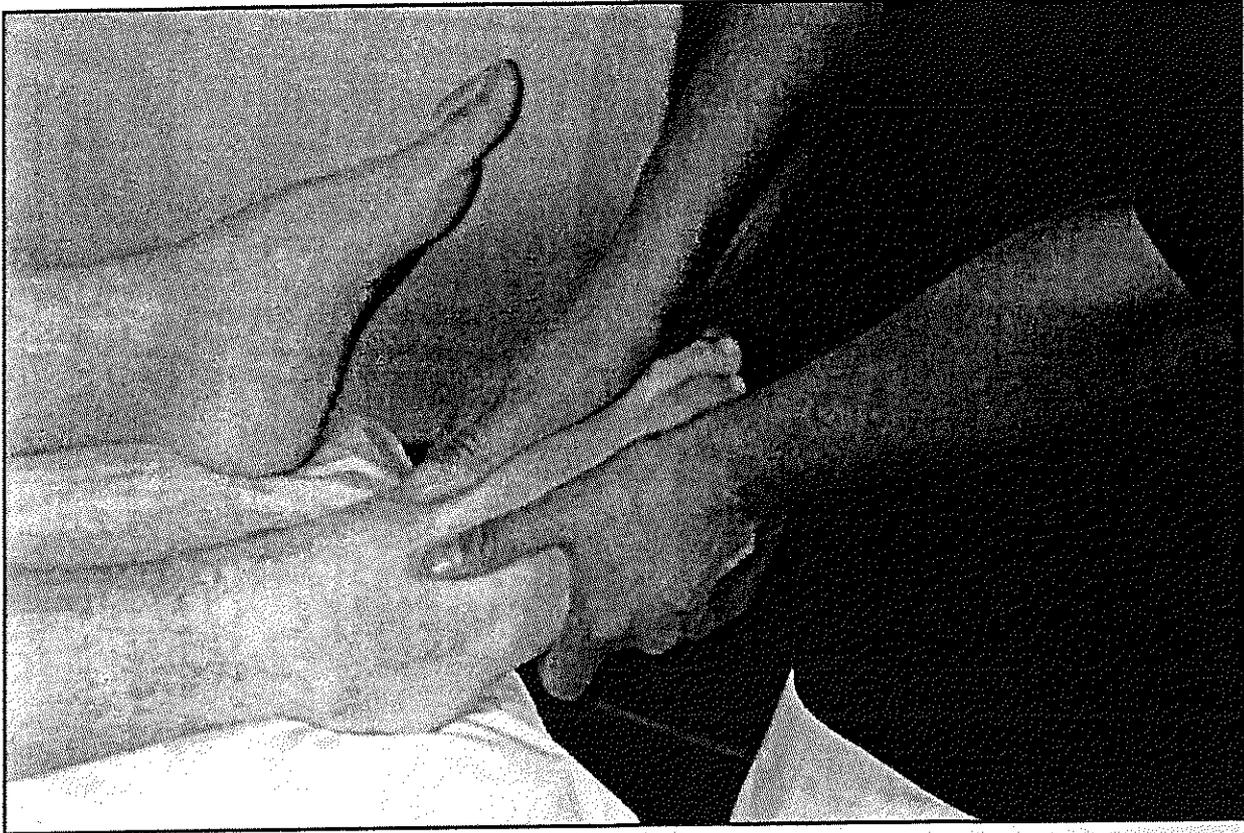


Fig. 29. Mobilising the intermetatarsal joints.

Purpose: To mobilise the intermetatarsal joints..

Procedure: The thenar and thumbs of both hands placed on adjacent metatarsal bones move each metatarsal bone in opposition to each other repetitively aprox. x 5.

Outcome: Improvement of the general function of the foot.

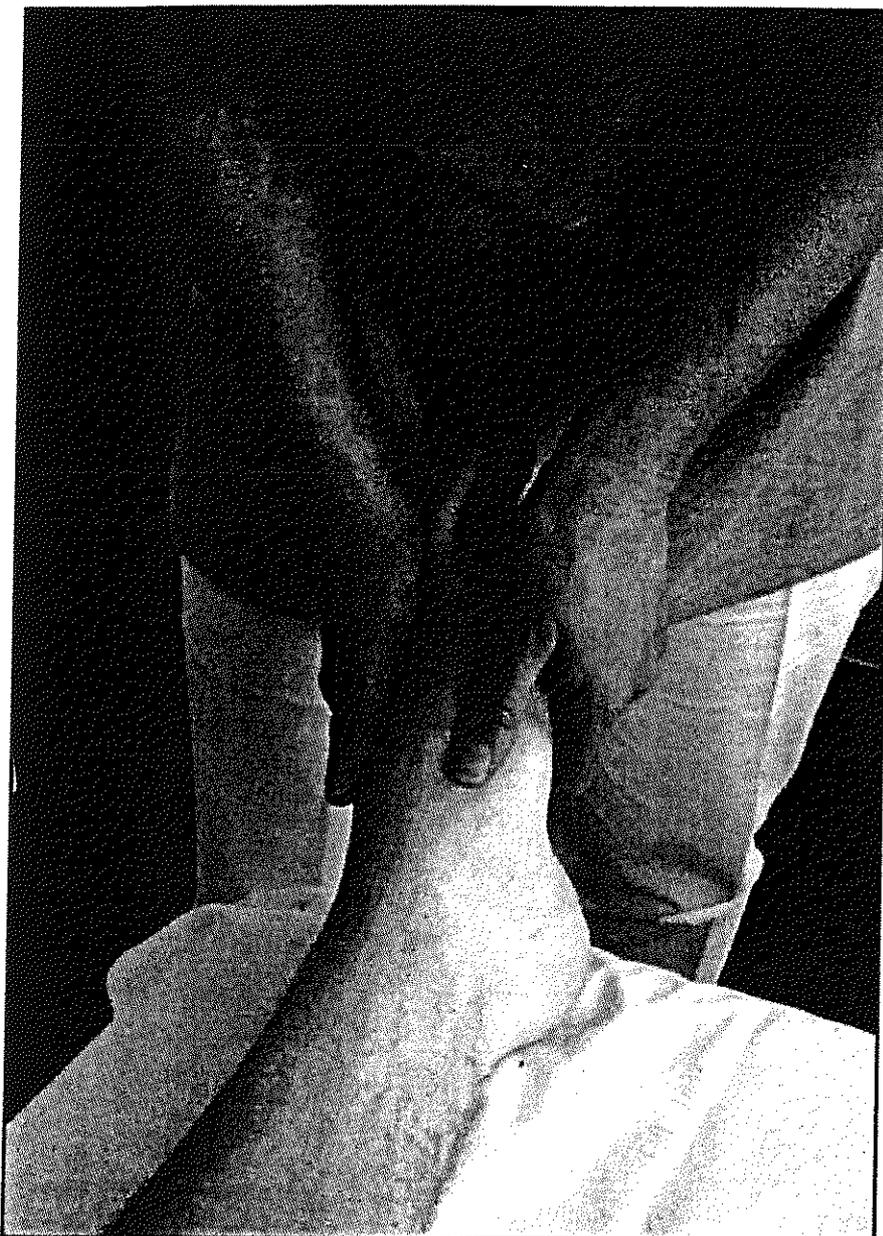


Fig. 30. General mobilising of the arches of the foot.

Purpose: To mobilise the arches of the foot

Procedure: Grasping the foot with both thumbs on dorsum and the 2-5 fingertips in planta, the arches of the foot are increased repetitively approx. x 5.

Outcome: Improvement of the general function of the foot.

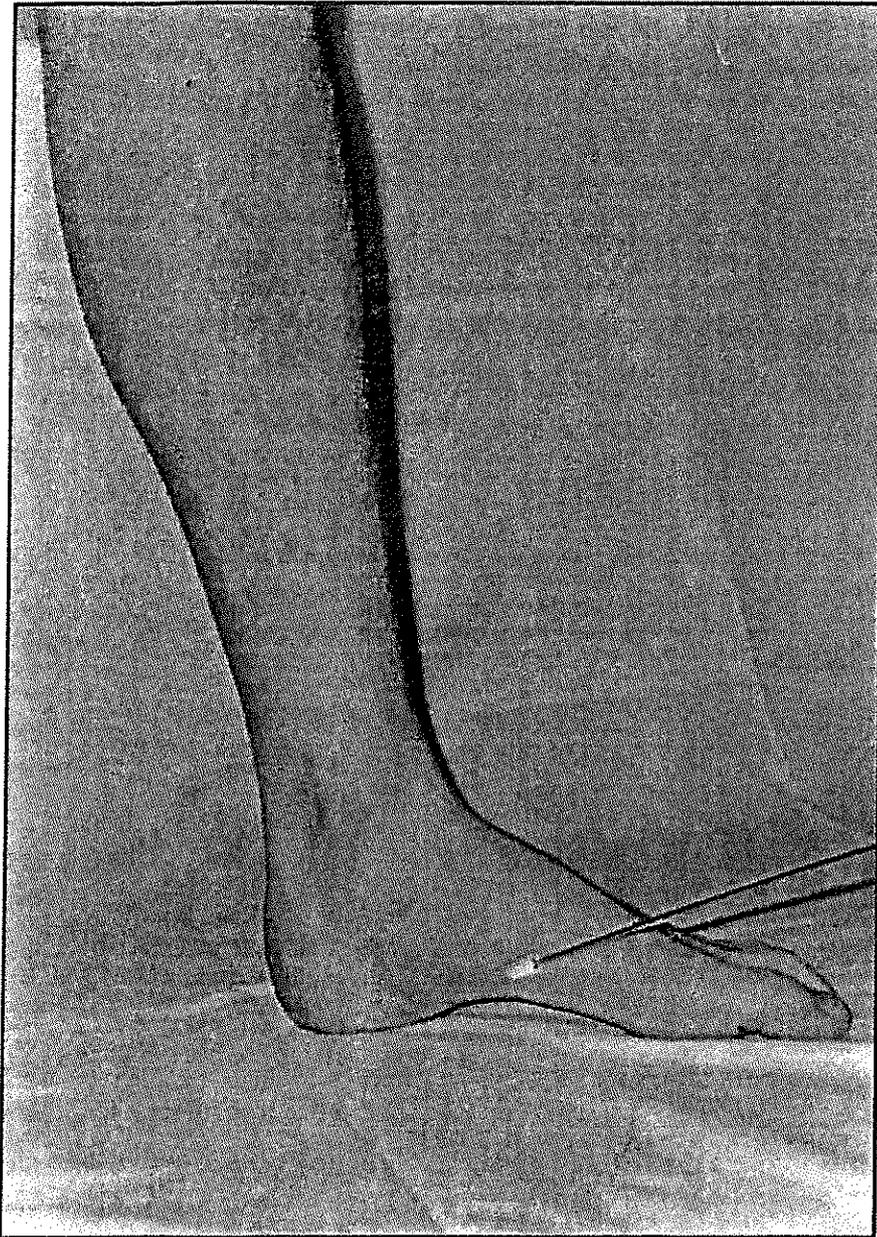


Fig. 31. Training of the quadratus planta muscle (making a short foot).

Purpose: The quadratus plantae is a supporter of the medial arch of the foot. After falanga this arch is often decreased. The purpose is therefore to gain strength in this muscle, to support the medial arch, and to self-mobilise the joints of the feet.

Procedure: In standing or sitting with bodyweight on the foot, the client makes a short foot without activation of the flexor muscles of the toes.

Outcome: Improvement of foot function.

1.3 Stretching the muscles

Altered function of the foot and abnormal gait pattern often lead to tight muscles with restriction in range of motion and poor postural control. The consequences are tight muscle fascia, increase in muscle tone, tender- and triggerpoints in the muscles and tendinitis at the attachments of the tendons on the bones. Various stretching methods should be applied to improve the normal muscle function of the legs and to avoid overuse.

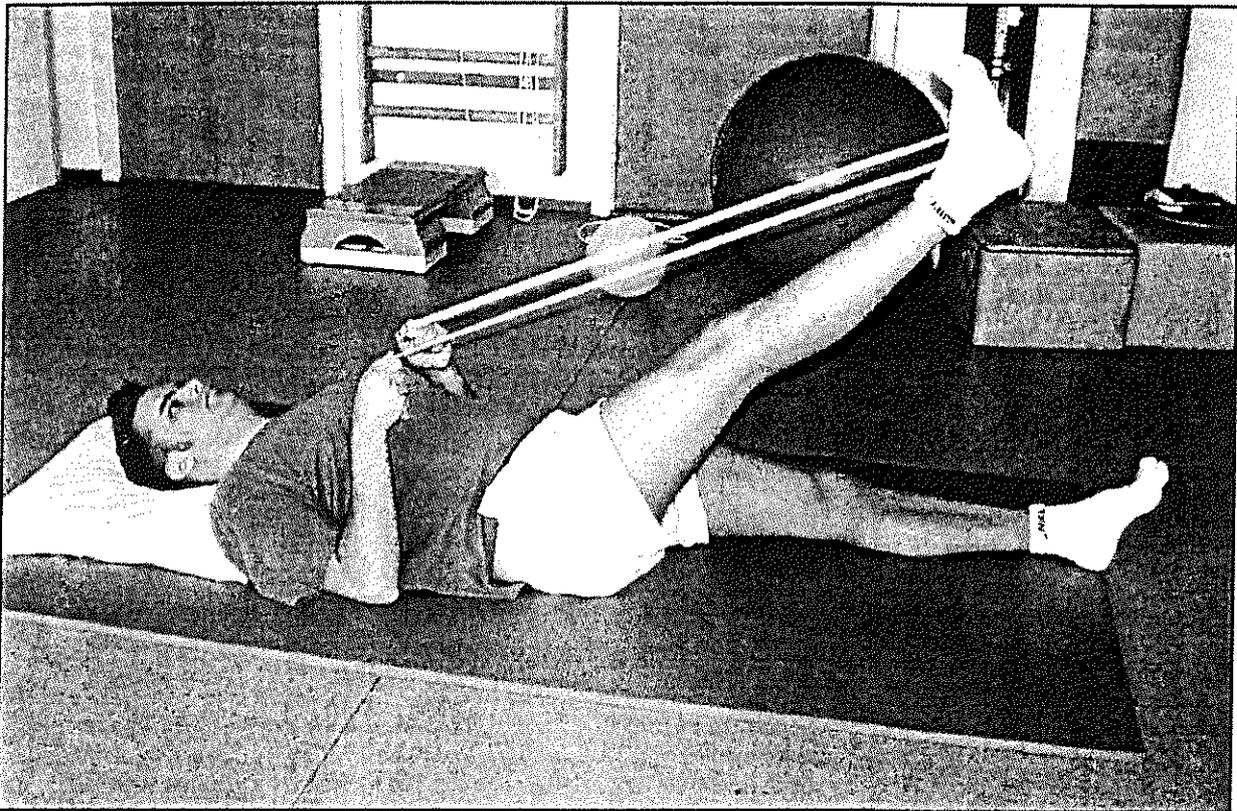


Fig. 32. Stretching the hamstrings.

Purpose: To stretch the hamstrings to improve range of motion in the hip and knee and to improve musclebalance.

Procedure: Lying supine with an elastic string around the foot. The hip and knee are first flexed, then the knee extended to the end of range and kept in this position for 20 seconds (stretching). The procedure is repeated 5-6 times. Breathing may be used during the stretching procedure.

Outcome: Neuro-muscular relaxation of the hamstrings.

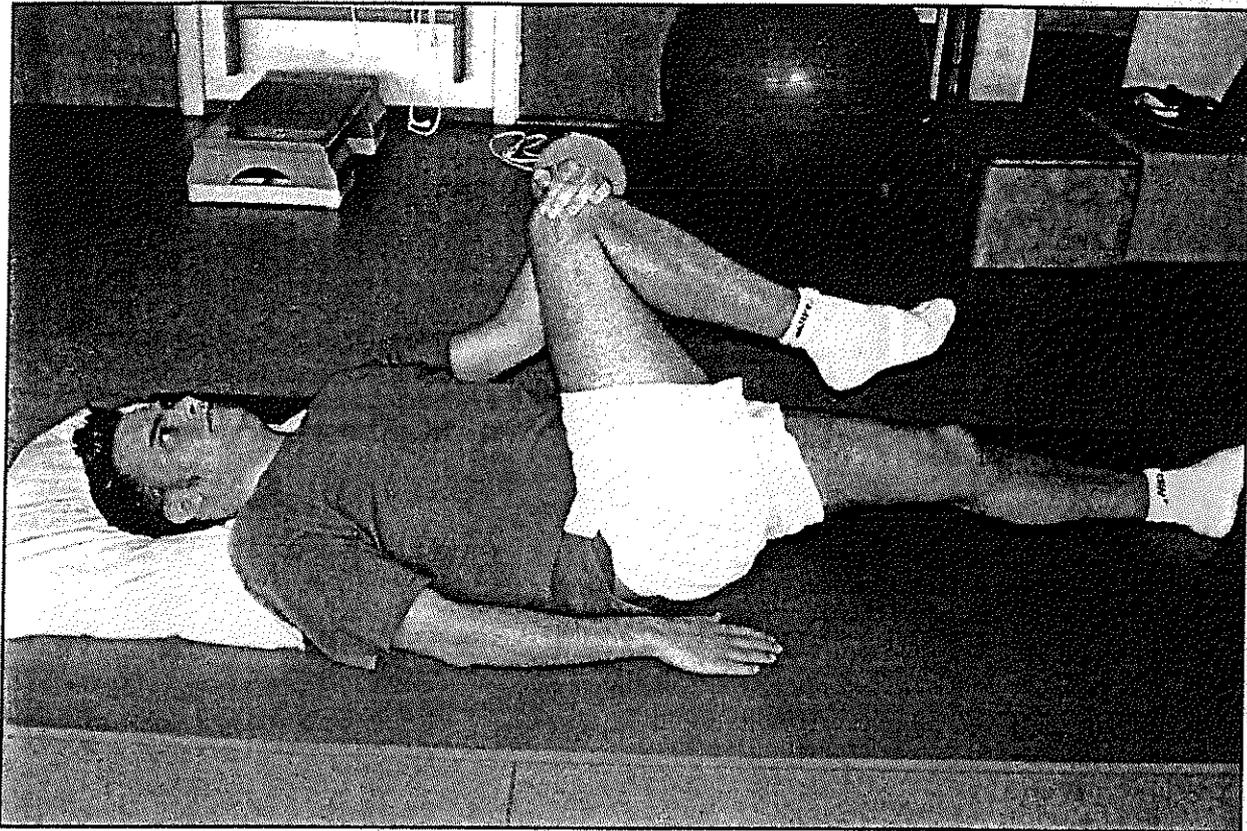


Fig. 33. Stretching of the m. tensor fascia lata.

Purpose: To stretch the tensor fascia lata to improve range of motion in the hip and knee and to improve musclebalance.

Procedure: Lying supine with the hip and knee in flexion and adduction internal rotation. The client applies resistance to abduction and external rotation for a few seconds with the opposite hand. Then relax and pull the knee into further adduction/internal rotation and hold this position for 20 seconds. Breathing may be used during the stretching procedure.

Outcome: Neuro-muscular relaxation of m. tensor fascia lata.

2. Activities

Training to improve postural control and general physical condition

The function of several tissues and inner organs is dependent on physical activity. These tissues have a built-in capacity, which adapt to activity or inactivity, e.g. muscles, joints, and the blood circulation.

Before torture many of the torture victims lived a normal active life and had a good physical condition. Training in fitness centres is not unknown for most. Other forms of sport like football, basketball etc. were often an integrated part of their daily routines. After torture, many years in prison in small cells, prohibition of movement and none the least pain have often changed their total life situation.

Graded physical training can therefore influence their physical capacity and general health in a positive direction. Graded training modalities are undertaken slowly with respect for the individual's ability and pain threshold.

Working with large muscle groups enhance the general physical condition, increase the heart-beat and the general blood circulation. Bicycling on a ergometre-bicycle may be a treatment modality. The client's train up to their working pulse, which may continuously be measured by a Polar Heart Rate monitor to demonstrate increase in the client's physical capacity. Other ways of improving the general level of fitness are body awareness exercises and aerobic training. To increase the walking distance the therapist helps the client to pace the training according to his capacity.

A variety of training methods is depicted below. They are not at all exclusive but should be used as inspiration for development, improvement and adaptation to the needs of the client. The PT's engagement and ability to adapt her/his skills to the benefit of the client enhance the motivation and learning process. All methods aim at improving the clients physical condition, body awareness, walking distance, and participation in daily activities.

2.1 Balance training, improvement of postural control and body awareness

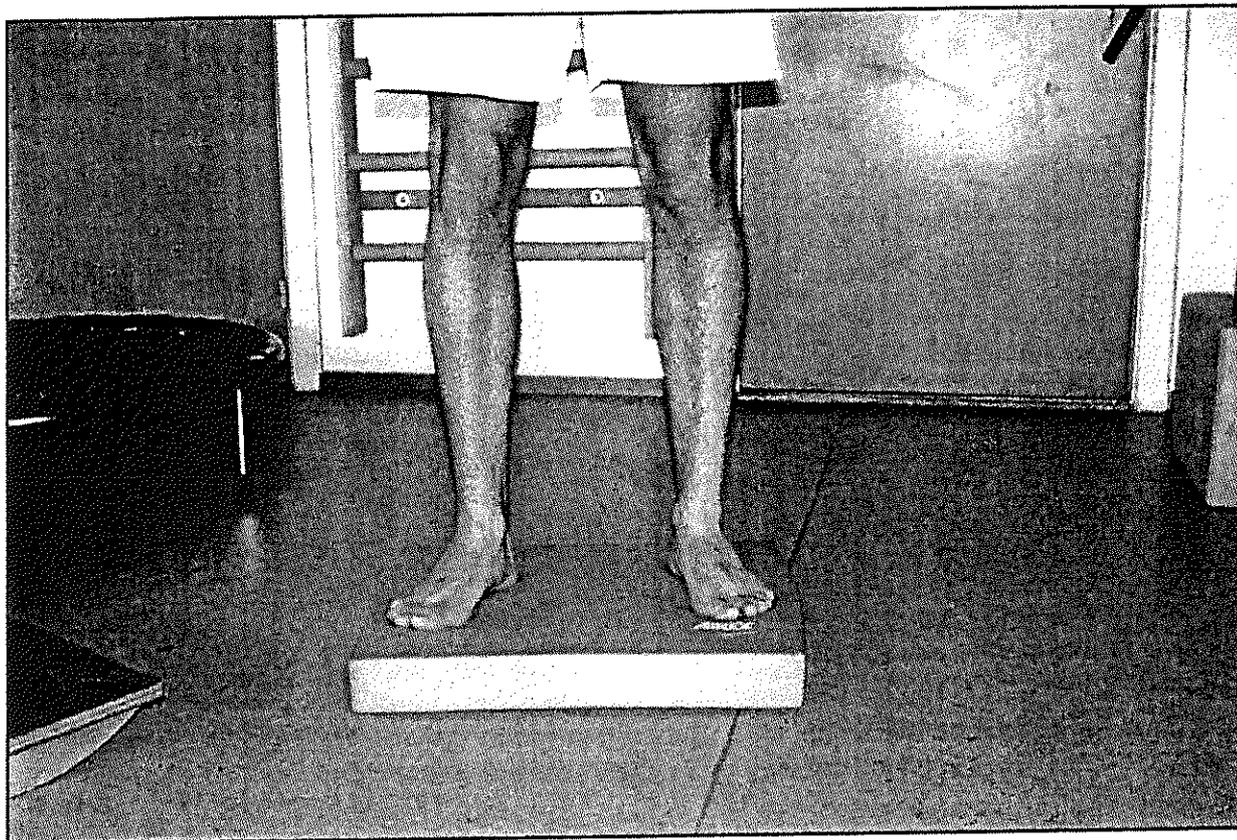


Fig. 34. Training balance on an Airex pillow.

Purpose: To improve balance, postural control and body awareness.

Procedure: Standing legs apart on a soft Airex pillow. The body weight is shifted in all directions allowing pressure on various parts of the soles..

Outcome: To become aware of body alignment and postural control.

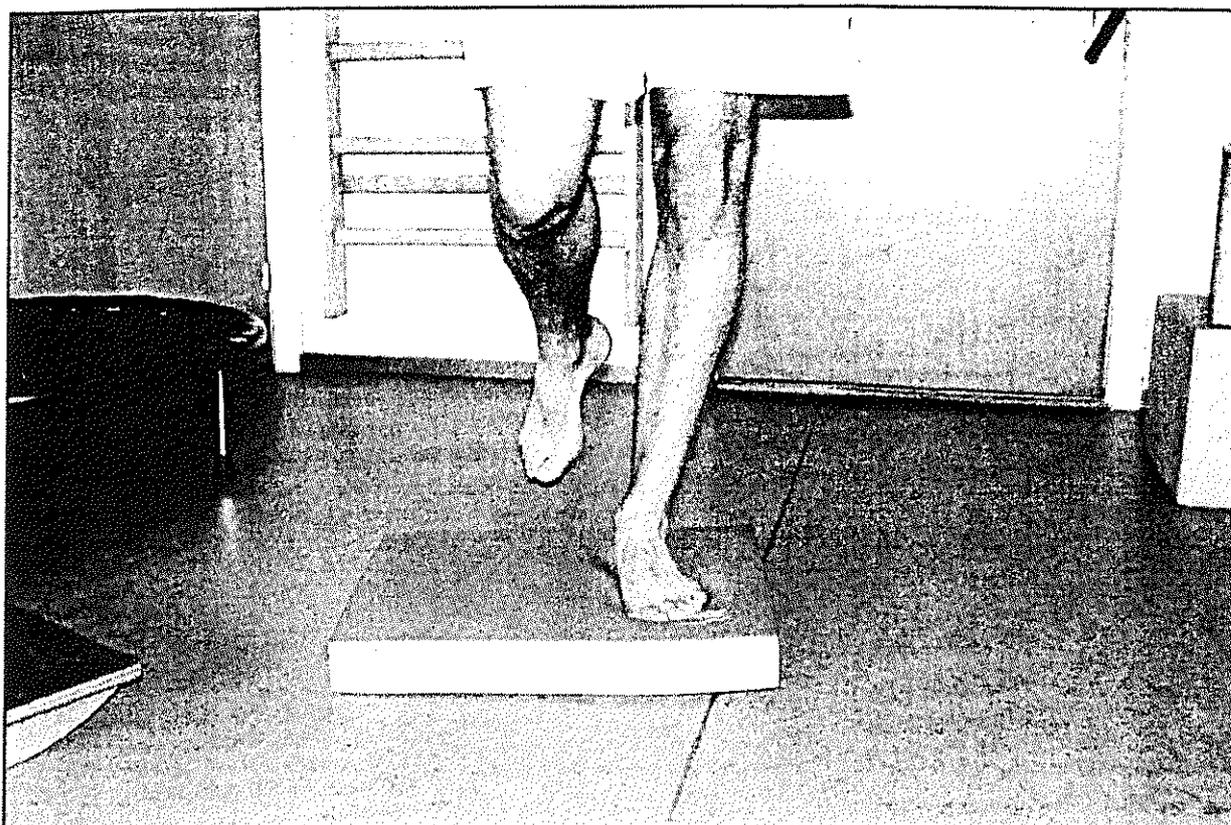


Fig. 35. Training balance on an Airex pillow standing on one leg.

Purpose: To improve balance, postural control and body awareness.

Procedure: Standing legs apart on a soft Airex pillow the body weight is shifted to one leg. The other leg is lifted and the body is kept aligned.

Outcome: To become aware of body alignment and postural control.

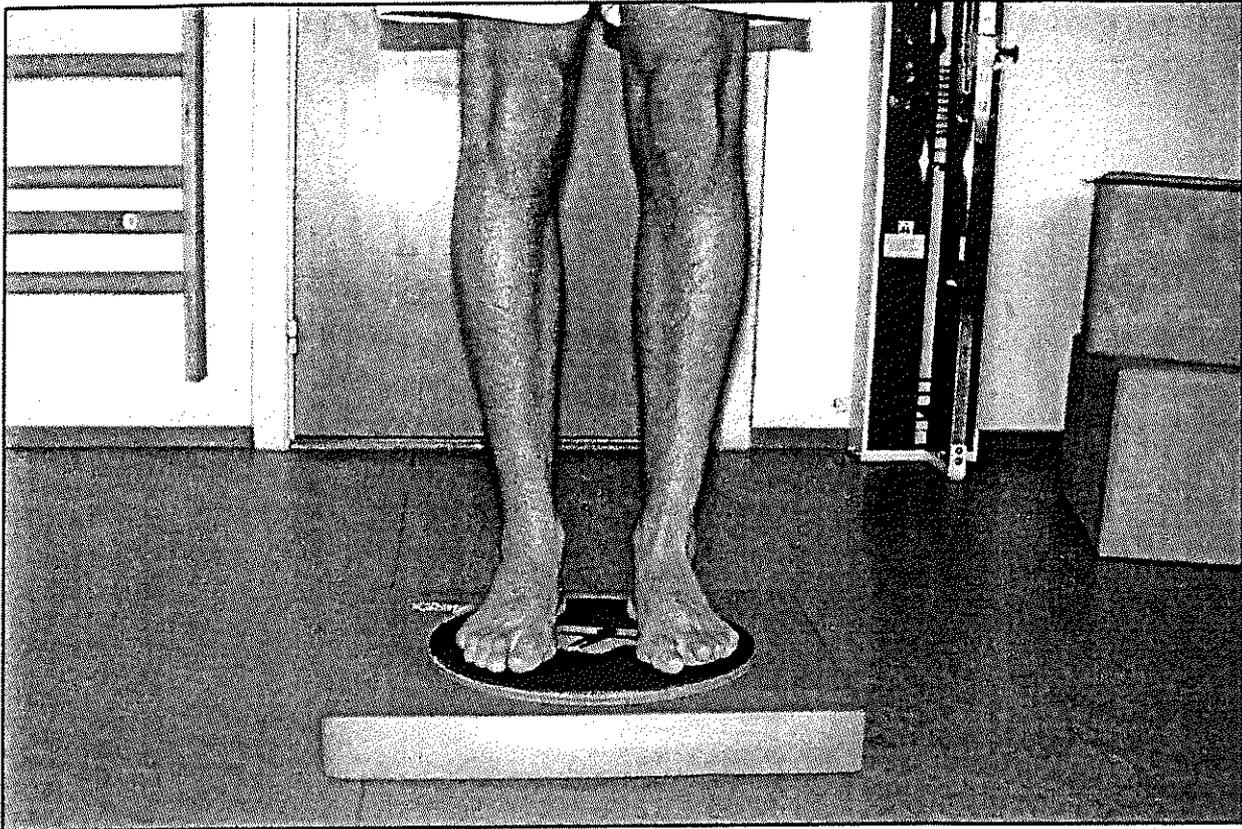


Fig. 36. Training on a balance board.

Purpose: To improve balance, postural control and body awareness.

Procedure: Standing on a balance board placed on top of the Airex pillow. The body weight is shifted in all directions.

Outcome: To become aware of body alignment and postural control

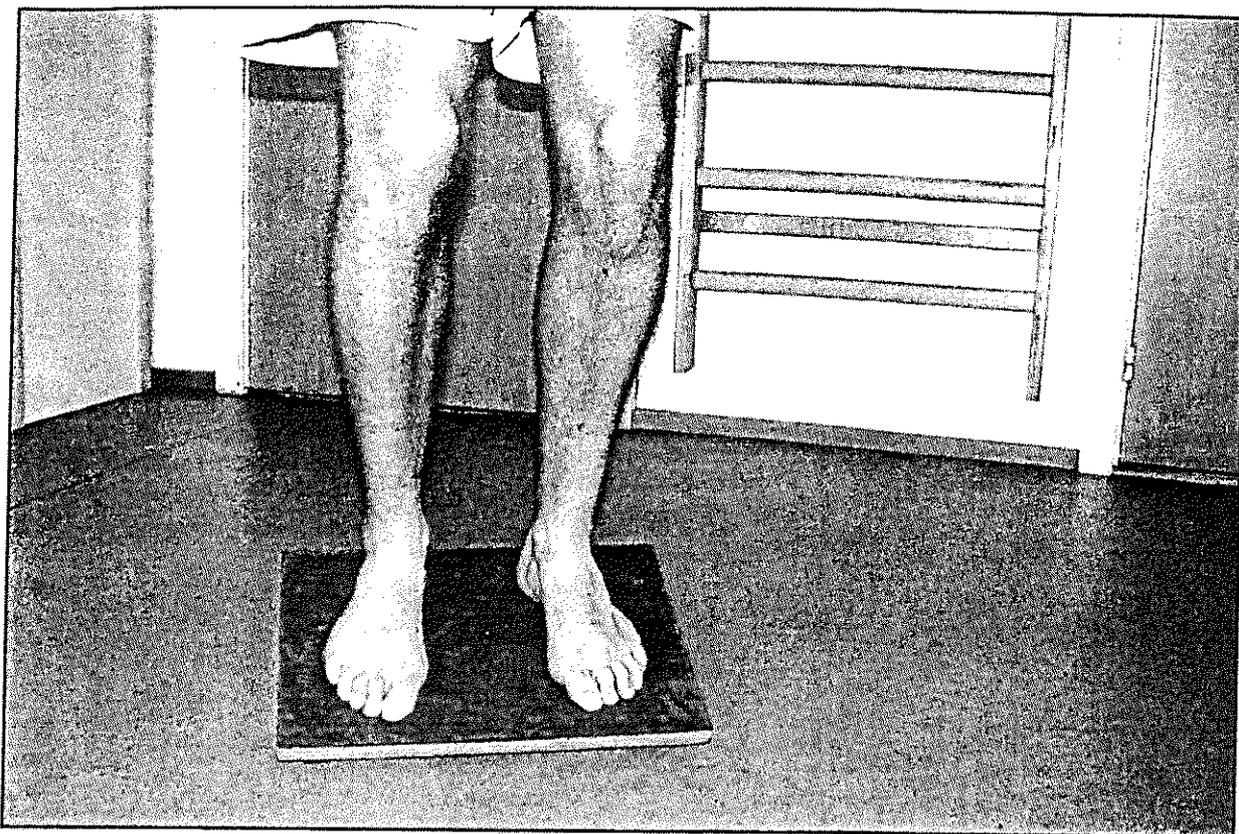


Fig. 37. Training on a balance board.

Purpose: To improve balance, postural control and body awareness.

Procedure: Standing on a balance board placed on the floor. The body weight is shifted in all directions. This procedure may be combined with shifting the body weight to one leg and lifting the other keeping the body aligned.

Outcome: To become aware of body alignment and postural control

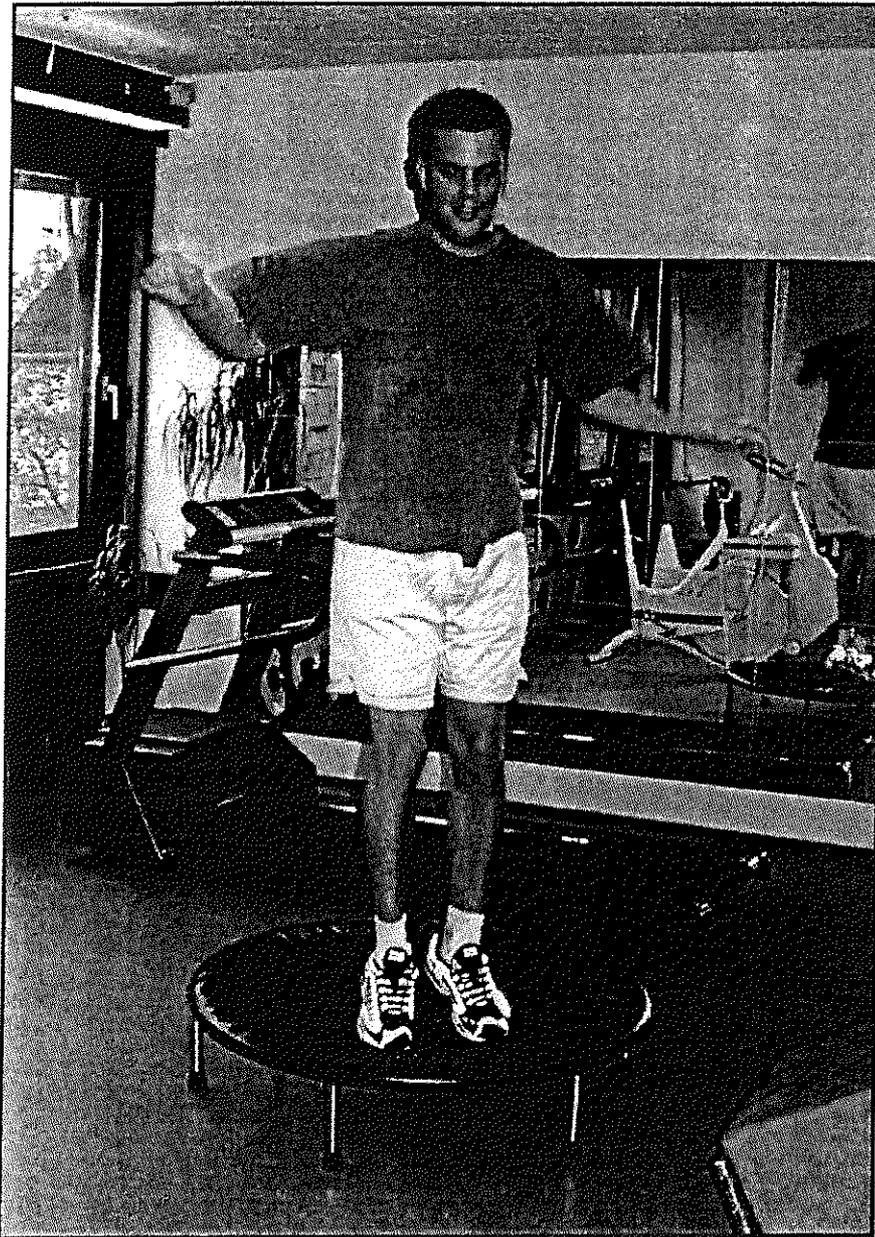


Fig. 38. Training balance on a mini-trampoline.

Purpose: Improve balance, postural control and body awareness

Procedure: Jumping on the minitrampoline the client shifts the position of the feet in various positions.

Outcome: To enhance postural control, increase body awareness and physical condition.

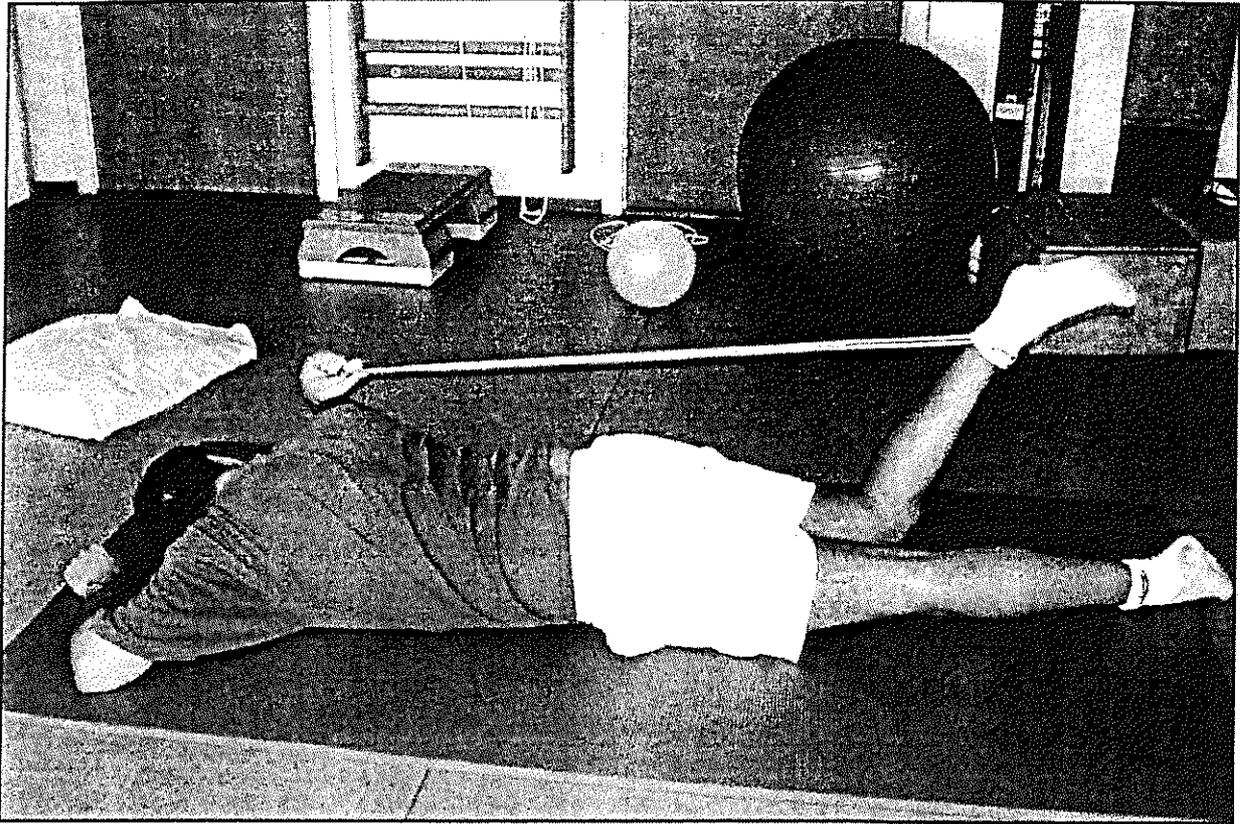


Fig. 39. Training m. quadriceps with a rubber band.

Purpose: To strengthen the quadriceps muscle.

Procedure: Lying prone with flexed knee. Knee extension against resistance of a rubber band.

Outcome: Strengthening the quadriceps muscle

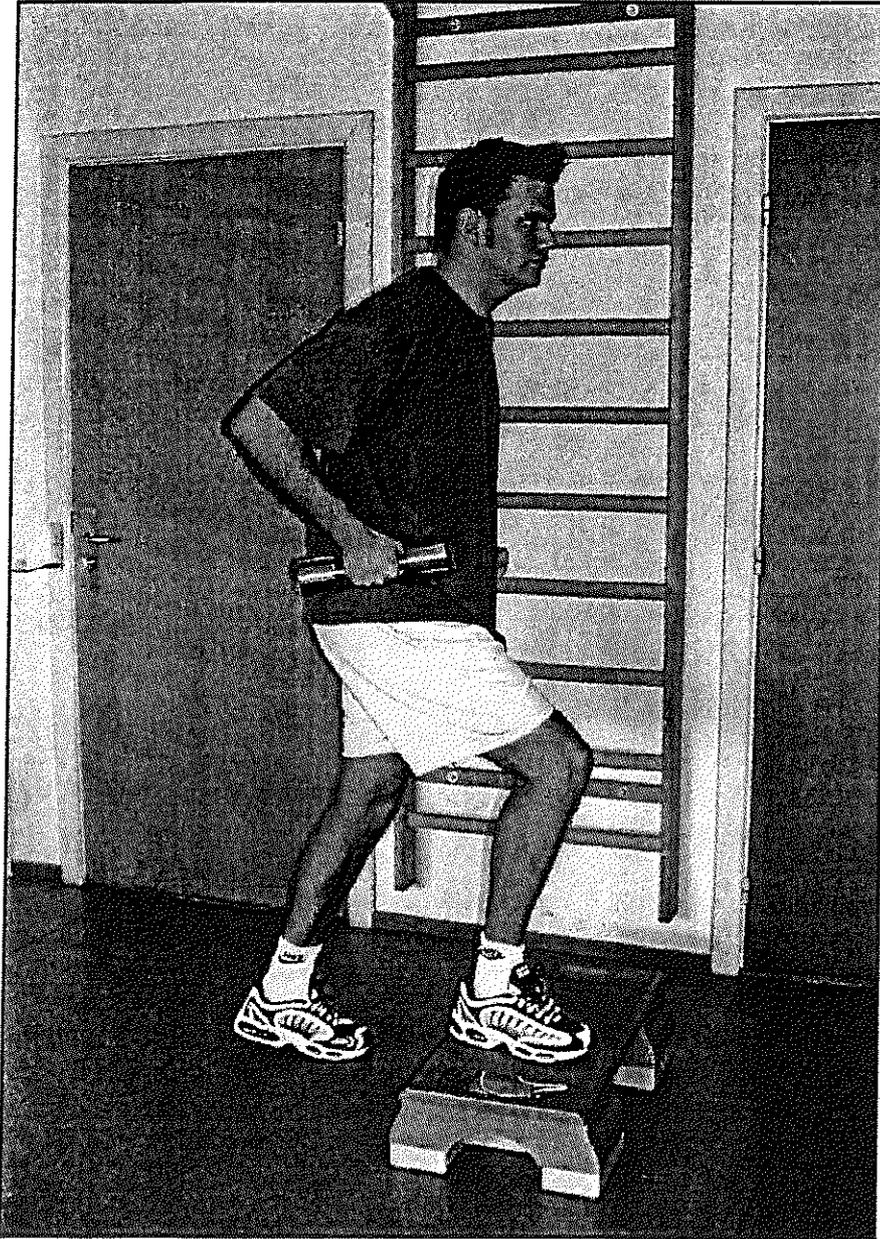


Fig. 40. Step up on a board with weights.

Purpose: To improve postural control and increase muscle strength in the legs

Procedure: Standing with one foot on ground, the other on a board with the height of one stair. Transfer the bodyweight to the foot on the board and step up and down several times.

Outcome: Increase muscle strength in the legs and increased body awareness

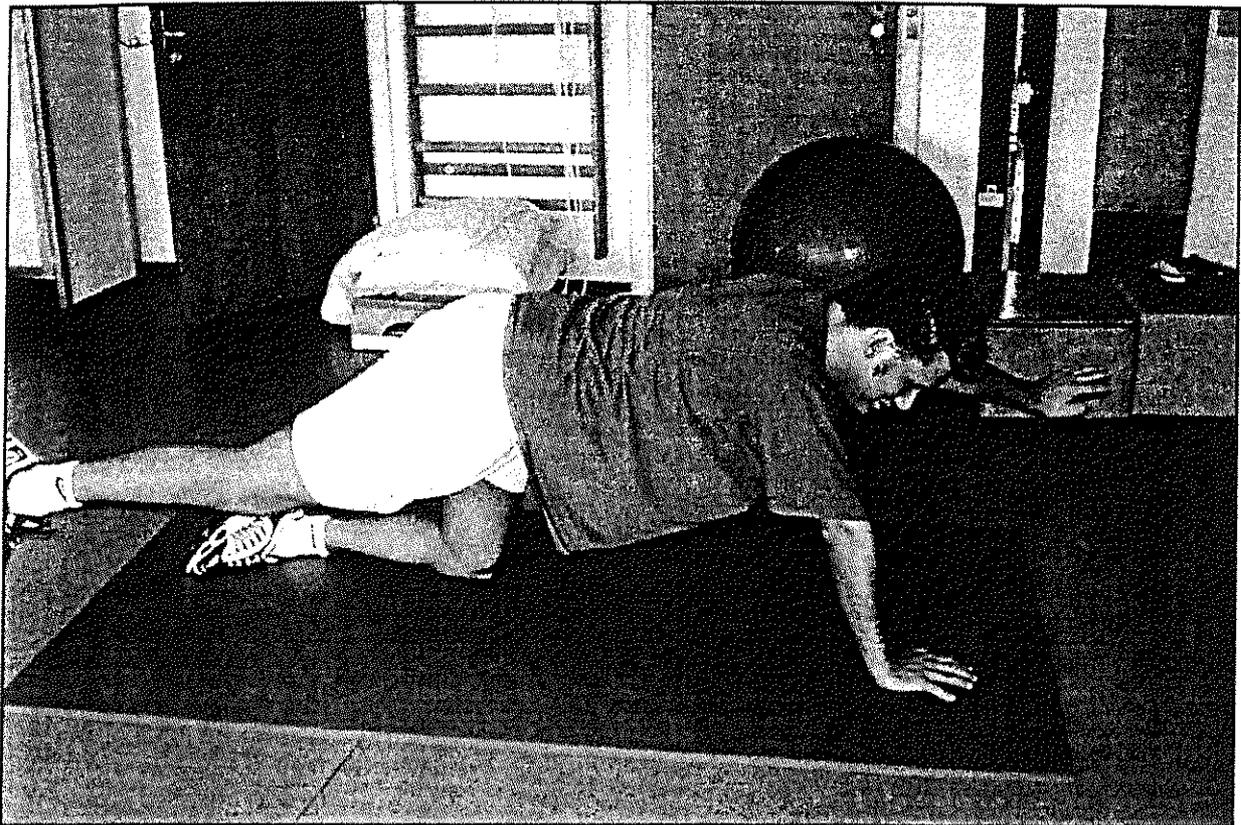


Fig. 41. General balance training.

Purpose: To train balance, postural control and co-ordination.

Procedure: Standing on 4. Diagonal rhythmic lift of arms and legs with moments of keeping the asymmetric position.

Outcome: Improvement of proprioception, postural control, balance and co-ordination.

2.2 Training in Body Awareness

Physical training is meant to teach the torture victim that movements may be associated with good experiences and well being, and that physical activity is not harmful to the body. The client participates in cognitive and awareness exercises and learns how new abilities can be adapted and integrated in his daily activities. This demands good communication skills from the physiotherapist.

The training includes various elements of change in posture and balance, proprioceptive training and sensory and motor skills by means of rhythmic and co-ordination exercises. These exercises may be combined with breathing exercises. Humour and games during training - supported by music - have a motivating and stimulating effect, and thus promote the learning process.

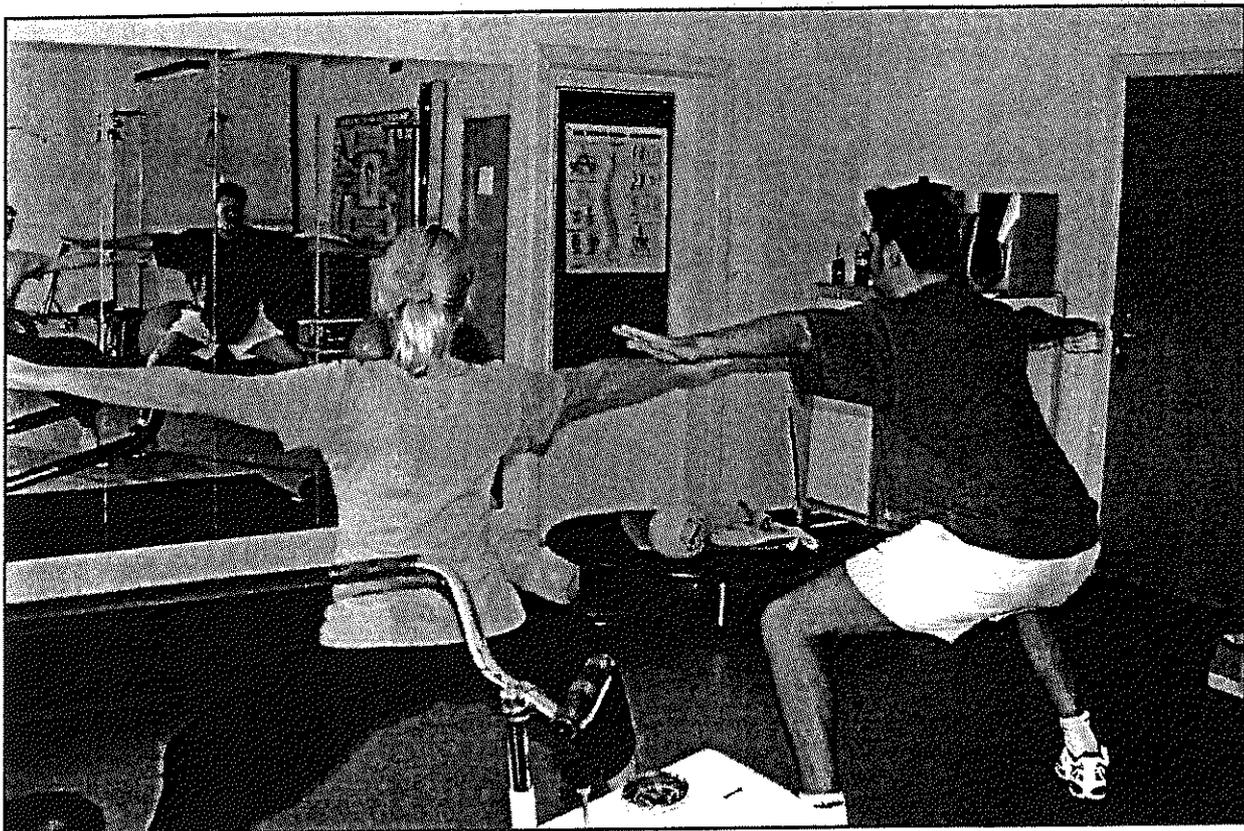


Fig. 42. Training body awareness in front of a mirror.

Purpose: To raise awareness of maladaptive movements and to change these

Procedure: In front of a mirror various movements are performed with the view to change maladaptive movement patterns within pain limits.

Outcome: To integrate new movement patterns in daily activities

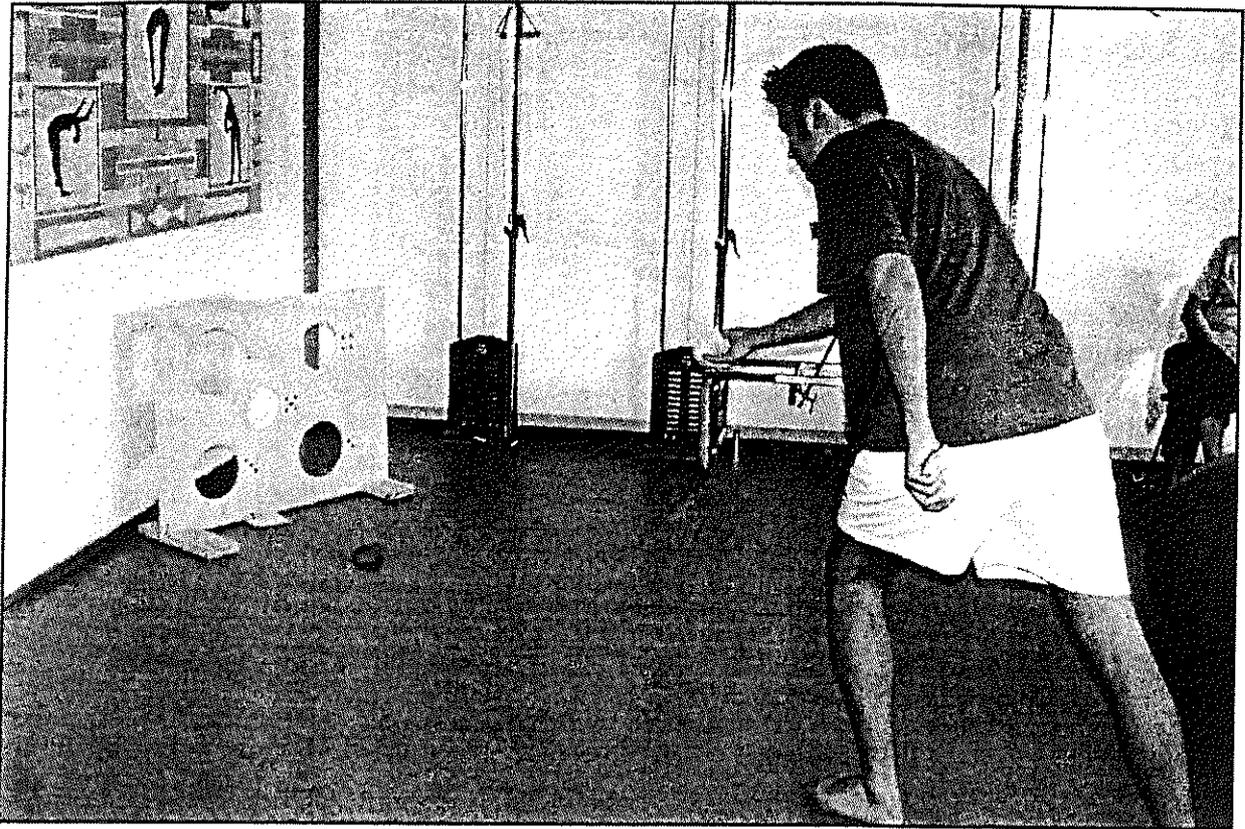


Fig. 43. Throwing balls.

Purpose: To enhance postural control and body awareness.

Procedure: Balls are thrown towards a board with various holes of different size. The balls should be aimed at going through the holes. The body moves forward and the body weight is shifted to the front leg.

Outcome: Increase of balance, postural control, and co-ordinate body movements within pain limits.

2.3 Apparatus training

Training with specialised equipment (Medical Training Equipment) has many advantages. It is specially designed to functional training in movements within the range of motion, where the client feels secure and experiences minimal pain. The movement is carried out without manual interference from the physiotherapist, but under continuous guidance. The choice of exercise is based on the assessment of the client's functional capacity and should include a variety of functional qualities, which should be adapted during the exercise. These qualities include stabilisation, co-ordination, postural balance and control, joint mobility and circulation-enhancing exercises.

An individual training programme is produced from a specially designed software programme and is tailored to the client's ability. During the training period the number of repetitions are increased, and notes are taken to reflect progress and improvement in the client's physical capacity. This programme, reflecting progress in the client's physical performance, is highly motivating to continuous training.

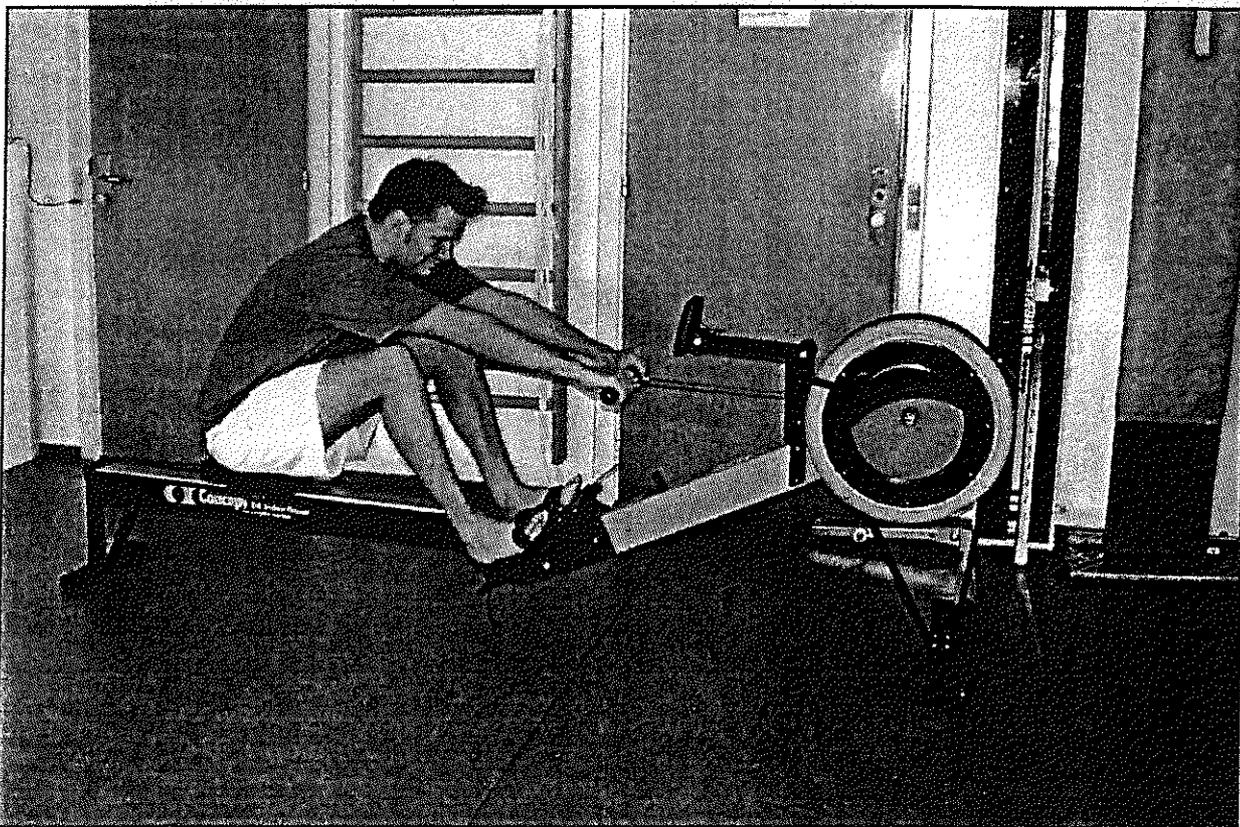


Fig. 44. Training in a rowing machine.

Purpose: To strengthen the muscles, improve co-ordination and balance and the general physical condition.

Procedure: Rowing slowly and rhythmically. On a display in front distance, speed, and time can be observed. Gradually the performance is increased.

Outcome: Measured improvement of general physical condition.

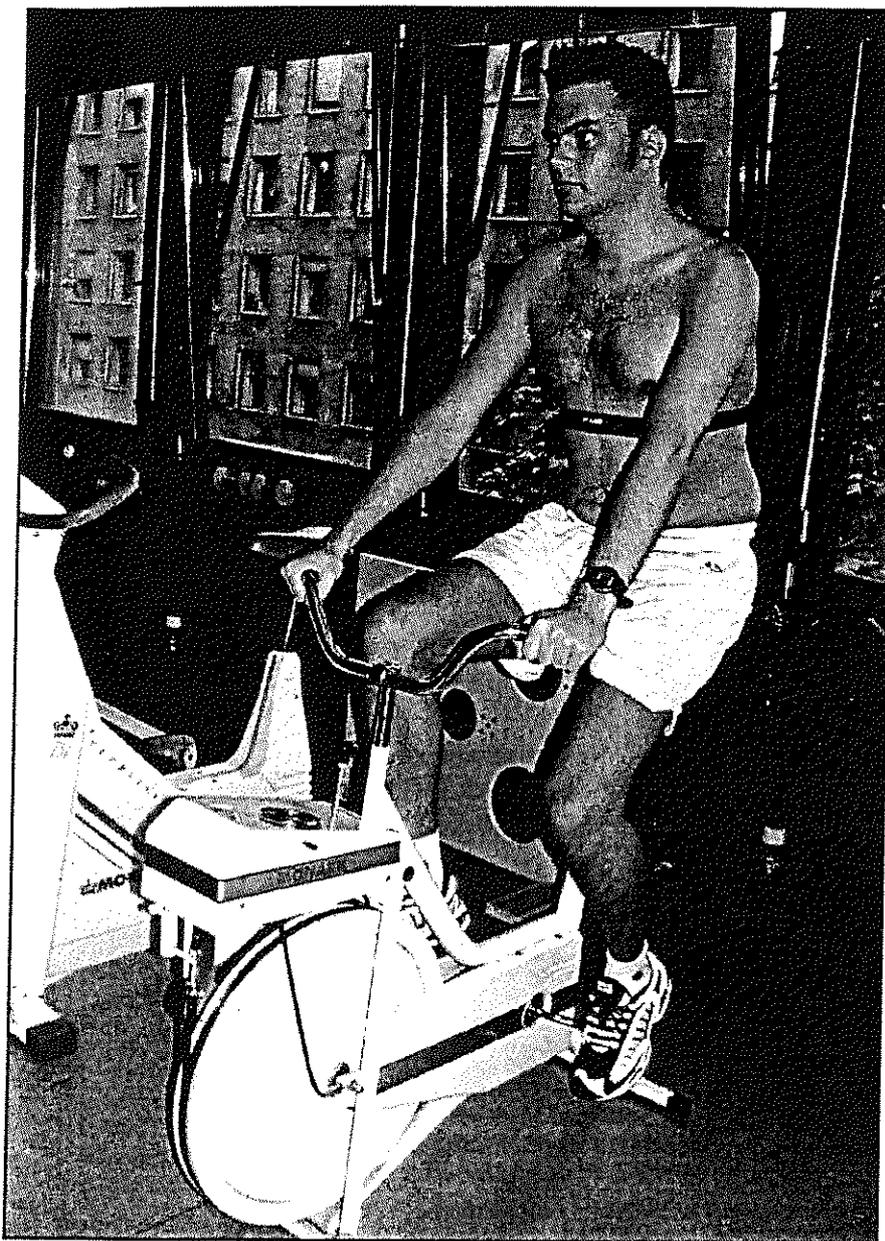


Fig. 45. Training on a ergometre bicycle.

Purpose: To strengthen the leg muscles and improve general physical condition.

Procedure: The physical function test forms the basis for the planning of continuous training on the ergometre bicycle. The intensity should be submaximal and the pulse rate is measured before and after the training.

Outcome: Measured improvement of general physical condition.

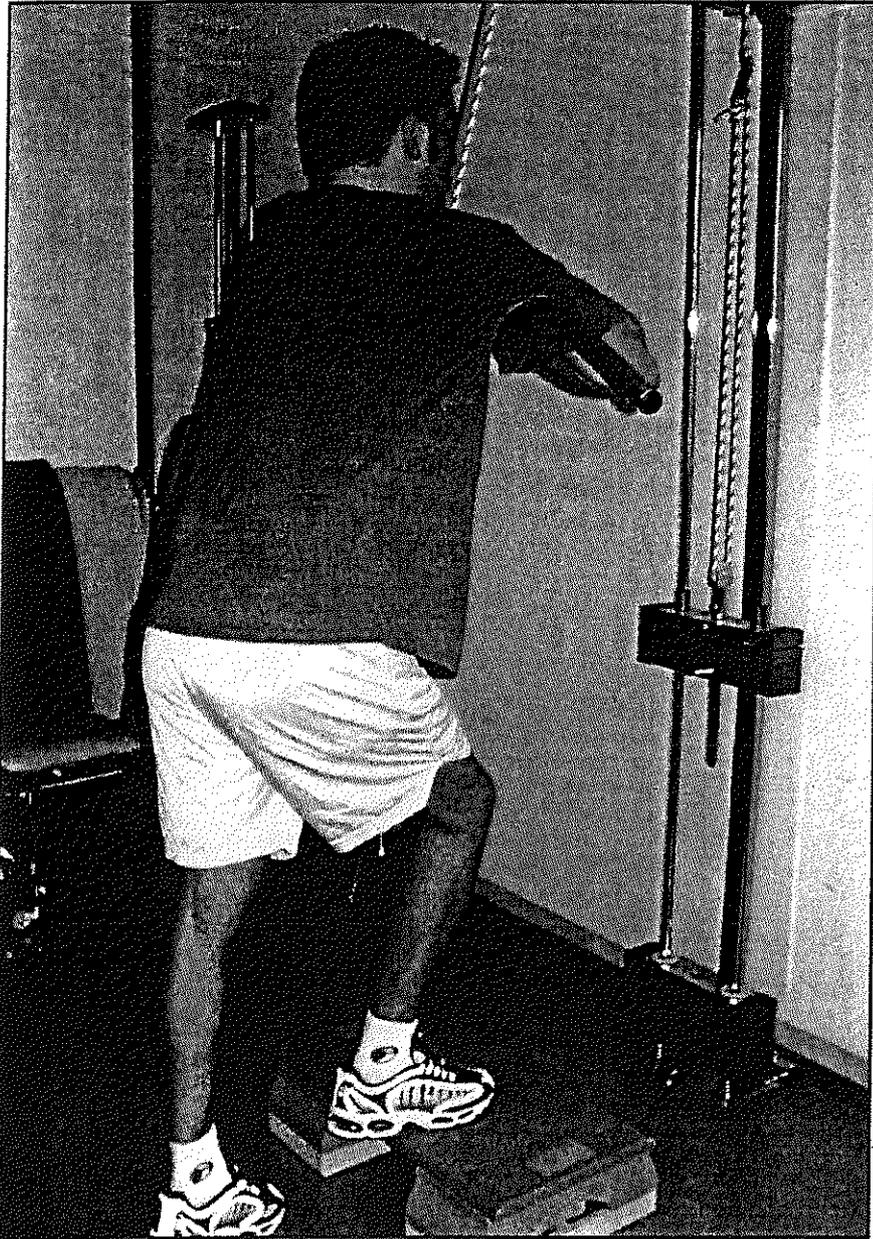


Fig. 46. Step up with weight relief.

Purpose: To train muscle strength in the leg and the ability to walk on stairs.

Procedure: Step up with one leg. Supported by the pulley the body weight is relieved with e.g. 0-30 kg.

Note: Transfer of the body weight forward reduces the compression in the knee. The exercise is repeated with breaks between each series.

Outcome: Increased muscle strength in the legs.

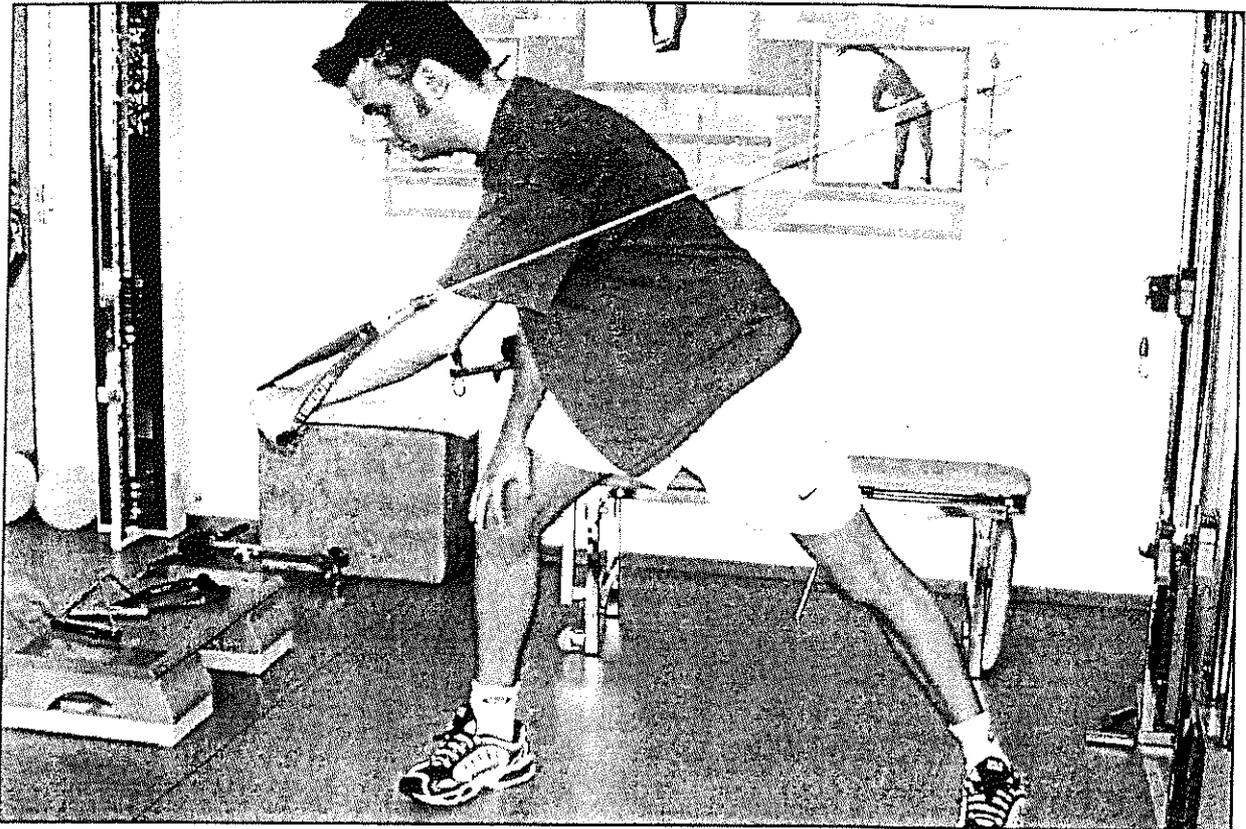


Fig. 47. Training in physical function.

Purpose: To train physical function adapted to individual ability.

Procedure: The therapist guides the client to use the Medical Training Apparatus in movements, which include stabilisation, co-ordination, postural balance and joint mobilisation. The exercise is repeated with breaks between each series.

Outcome: Increase in physical function and body awareness.

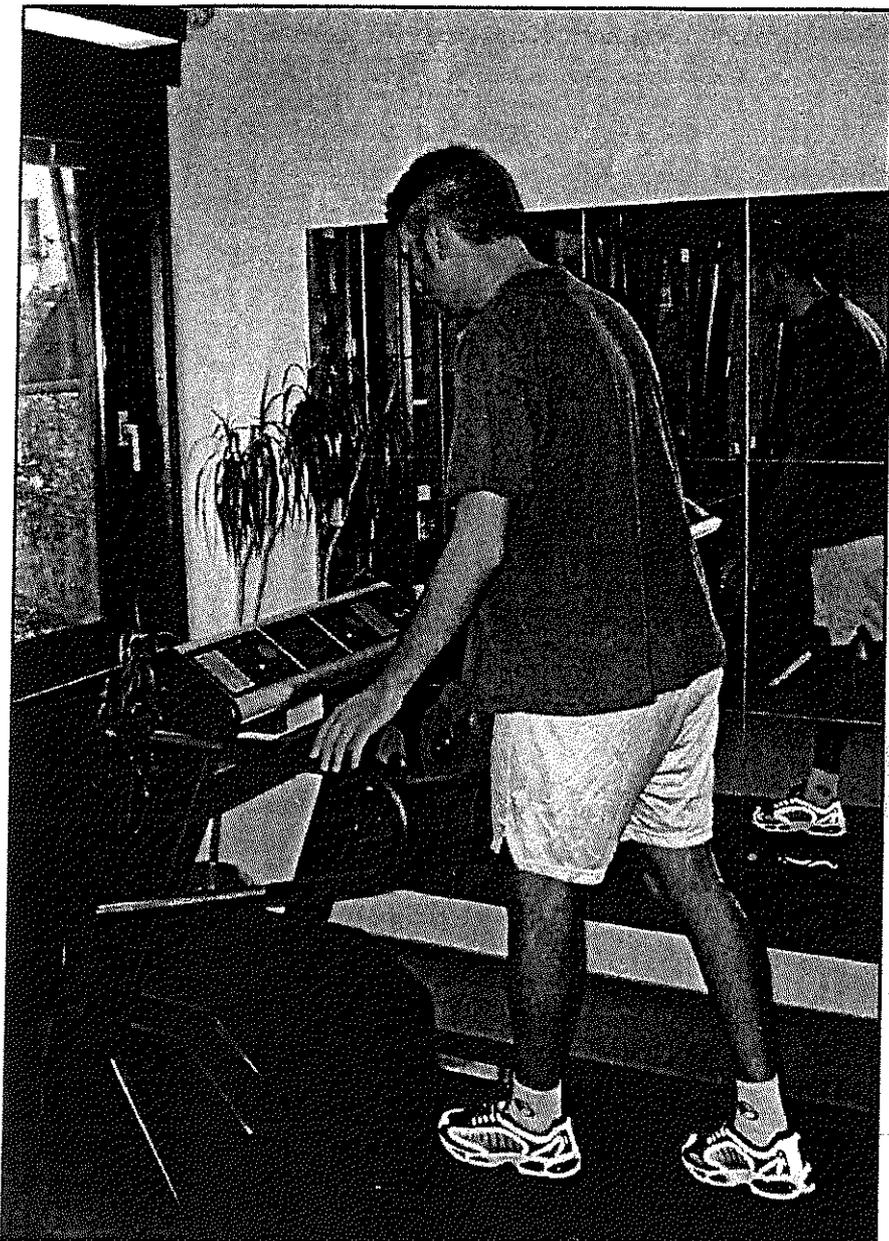


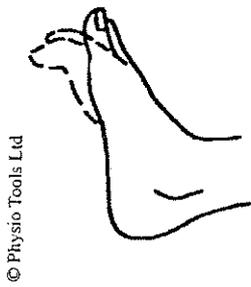
Fig. 48. Walking on a treadmill.

Purpose: To increase the distance in walking.

Procedure: Walking on a treadmill. The speed is adjusted to the client's ability. The walking time and distance are shown on a display in front. Both time and distance are gradually increased and paced to the client's ability .

Outcome: Ability to walk longer distances and improved physical condition.

2.4 Personal Individual Tailored Exercise program

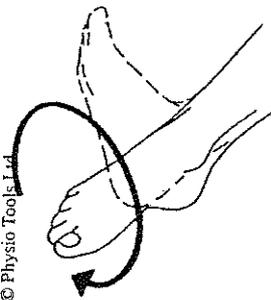


© Physio Tools Ltd

Lying or sitting.

Bend and straighten your toes briskly.

Repeat _____ times.

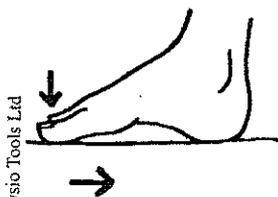


© Physio Tools Ltd

Sitting or lying.

Rotate your ankle. Change directions.

Repeat _____ times.

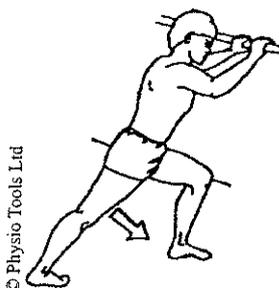


© Physio Tools Ltd

Sitting with your foot on the floor.

Shorten your foot by tightening the muscles on the sole of your foot. Keep your toes pushed straight against the floor.

Repeat _____ times.

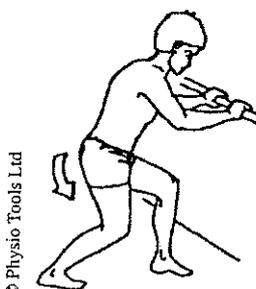


© Physio Tools Ltd

Stand in a walking position with the leg to be stretchen straight behind you and the other leg bent in front of you. Take support from a wall or chair.

Lean your body forwards and down until you feel the stretching in the calf of the straight leg. Hold approx. 30 secs. - relax. Stretch the other leg.

Repeat _____ times.

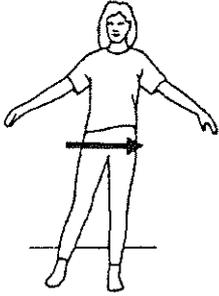


© Physio Tools Ltd

Stand in a walkin gposition with the leg to be stretched behind you. Hold on to a support.

Bend the leg to be stretched and let the weight of your body stretch your calf without lifting the heel off the floor. Hold approx. 30 secs. - relax.

Repeat _____ times.

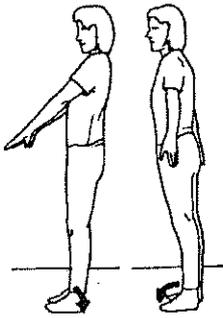


© Physio Tools Ltd

Stand with your legs apart and feet parallel.

Transfer your weight from one leg to the other.

Repeat _____ times.



© Physio Tools Ltd

Stand with your legs apart and feet parallel.

Transfer your weight onto your heels, then transfer your weight onto your toes.

Note. Keep the sole of your foot on the floor throughout the exercise.

Repeat _____ times.



© Physio Tools Ltd

Stand straight. Take a step forwards and take the weight onto the front leg.

Push off your front leg bringing legs back together.

Repeat with other leg.

Repeat _____ times.

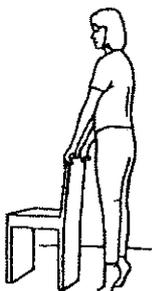


© Physio Tools Ltd

Stand.

Lift one leg.

Repeat _____ times.



© Physio Tools Ltd

Stand.

Push up on your toes.

Repeat _____ times.

2.5 Individual advice and adjustment of physical aids

In many cases the client needs physical aids which will reduce pain in the feet and calves, increase walking distance and thus enhance functional abilities. The physiotherapist helps the client to apply for such aids in the communities, which some times offer special grants. After falanga torture the most common aids are shoes with supporting heels and shock absorbing soles. Sometimes special individually measured shock absorbing foot orthosis should be considered.

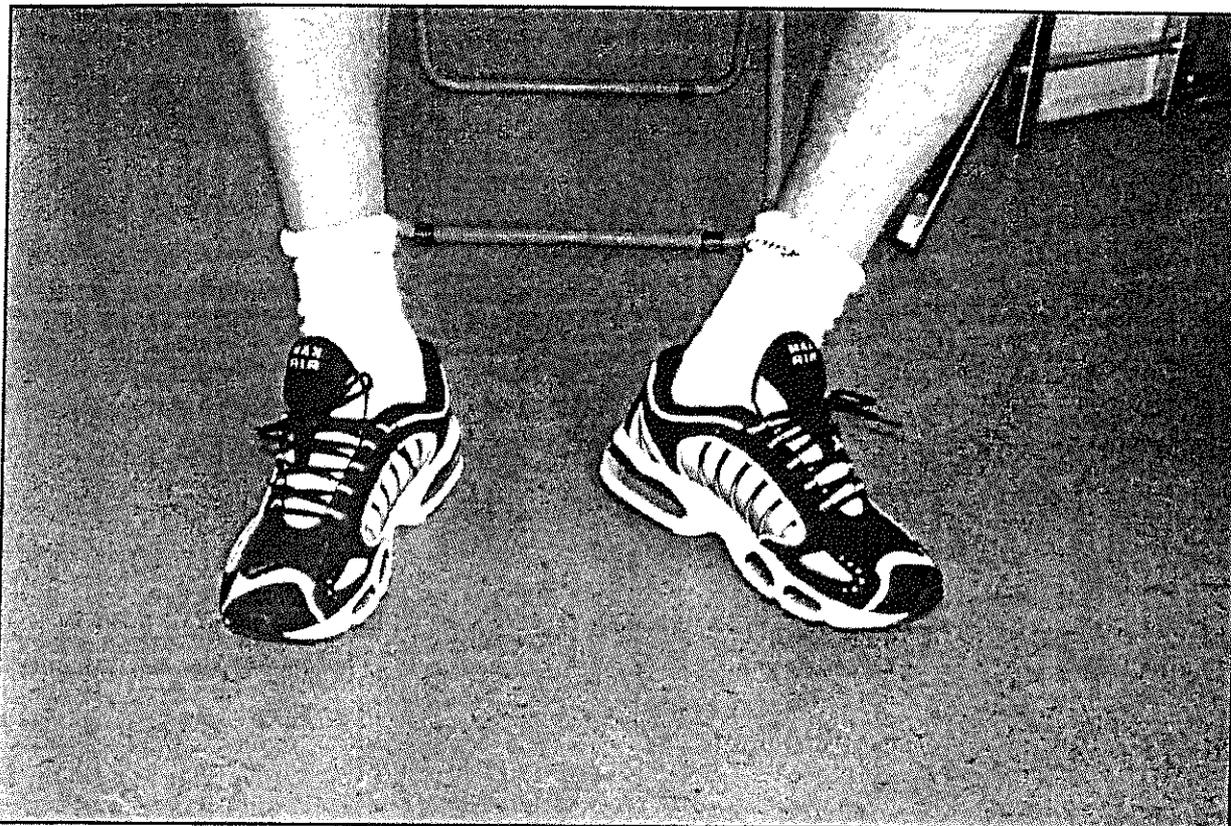


Fig. 49. Shoes with flexible, shock absorbing soles.

Purpose: To reduce pain, enhance ability to unwinding of the foot and increase walking distance.

Procedure: The therapist guides the client to acquire shoes with good heel support and shock absorbing flexible soles. The client train walking with correct unwinding of the foot.

Outcome: Pain reduction in the feet and legs. Increased walking distance.

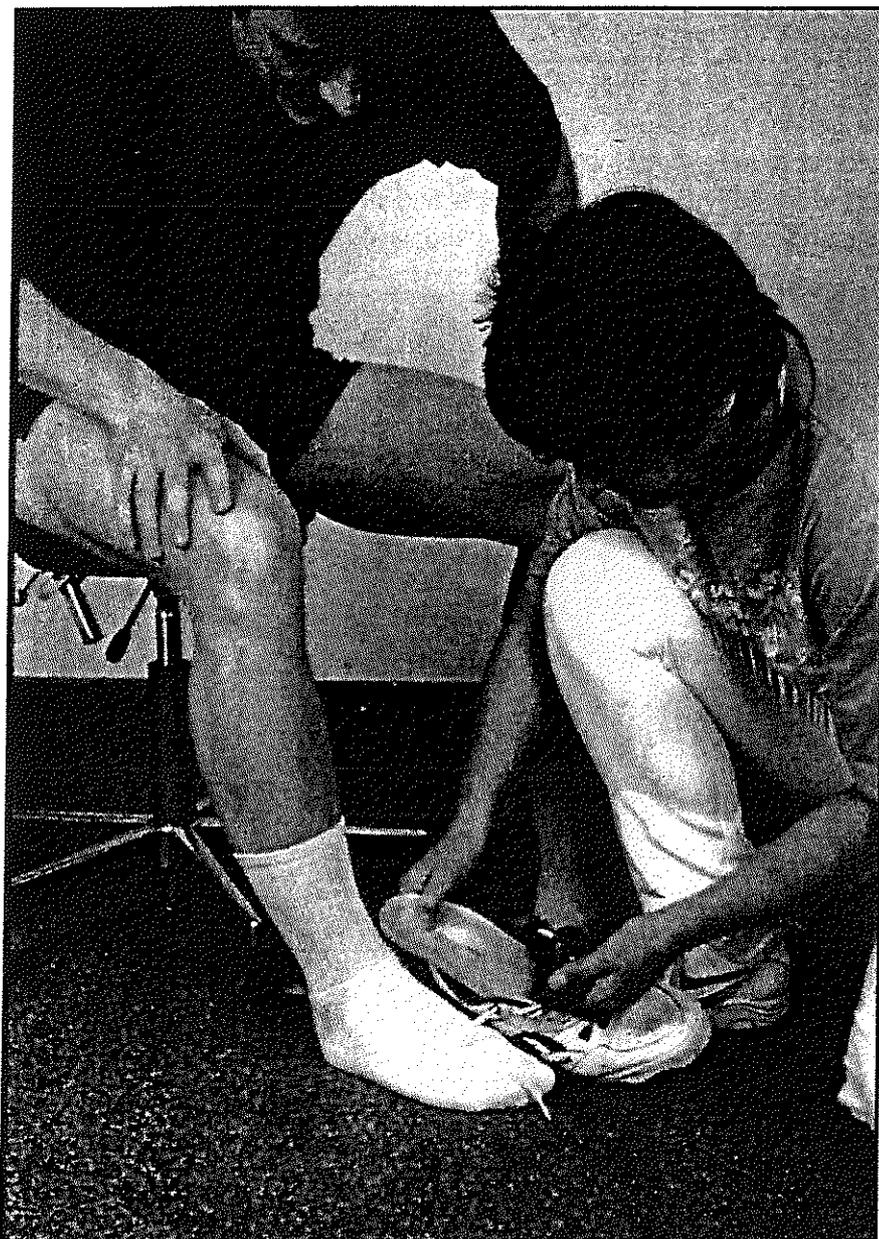


Fig. 50. Inlays in shoes.

Purpose: To apply individually measured inlays in shoes with arch support and to further the shock absorbing effect when walking.

Procedure: A print of the weight bearing feet forms the basis for the production of the inlays, which are made of a soft shock absorbing material.

Outcome: Pain reduction and increased walking distance.



Fig. 51. Taping.

Purpose: To support and stabilise the ankle and foot joints.

Procedure: In-elastic or elastic tape is applied to support the ankle and the arches of the foot.

Outcome: Pain relief and ankle/foot support when walking. Increased walking distance



Fig. 52. Ankle bandage.

Purpose: To support and stabilise the ankle and foot joints.

Procedure: A pre-manufactured elastic bandage is applied to support the ankle and the arches of the foot.

Outcome: Pain relief and ankle/foot support when walking. Increased walking distance

2.6 Treatment of Neurogenic Pain

Education in self management of pain

Neurogenic pain differs in many ways from “ordinary” nociceptive pain. The pathophysiology, clinical picture, and treatment are different. In many cases the client’s beliefs and attitudes towards pain has led to fear, catastrophizing thoughts, avoidanc behaviour in anticipation of pain, leading to longstanding physical inactivity and detrimental impact on the musculo-skeletal system. The objectives for the physiotherapist is therefore:

- Educate the client in the basics of the physiology of pain and pain mechanism.
- Promote cognitive behavioural changes including awareness of fear and avoidance behaviours.
- Reassure changes in behaviour
- Advice to maintain activities

Some clients suffer from severe allodynia and hyperalgesia. They describe areas on the feet and legs as extremely sensitive. Light touch from e.g. loose clothes that rub against the skin can elicit exquisite pain. The clients should find clothes that fit closely to the skin to avoid interspace to the body. The material should have an even surface e.g. silk or polyamide or other smooth surfaces, that the client finds accommodating. Inner seams in pants should be avoided and the surface inside the shoes should be smooth with no hard bumps or pressures. In many cases tight elastic bandages e.g. “tubigrib” on the legs and feet is a good solution. Especially characteristic for allodynia is that pain is provoked by stimuli that do not usually provoke pain e.g. cold. The clients are therefore advised to keep the body and feet warm and avoid outdoor activities in damp, cold and windy weather.

Self treatment with Transcutaneous Electrical Nervous Stimulation (TENS)

All types of electrical apparatus and medical equipment can provoke anxiety and apprehension. We know from experience, however, that clients in most cases accept self-treatment with TENS after receiving thorough oral and written information and instruction. They learn how to place the electrodes in relevant places on the legs and feet, and most important to regulate the stimulation themselves. Both low and high frequency stimulation is used, depending on the character of pain and the reporting of the effect. It is very rare for the clients not to accept this treatment, even when they have been exposed to electric torture.

There is good evidence that TENS has a pain relieving effect on chronic nociceptive as well as neurogenic pain. The therapist should therefore NOT refrain from introducing this method. Another advantage is that the clients can control the stimulation themselves, both when at rest and when moving around.

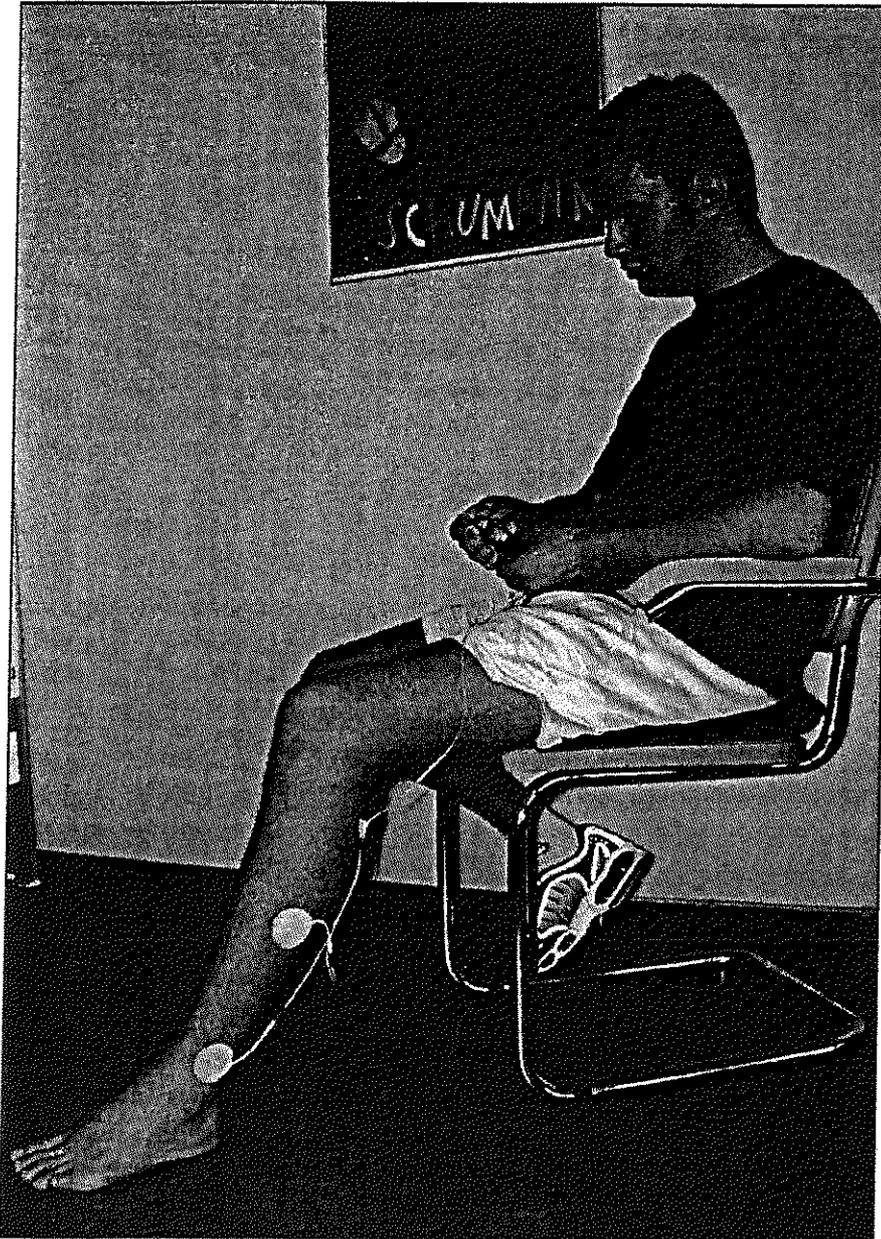


Fig. 53. Stimulation with TENS.

Purpose: Self-management of pain. Increased physical activity.

Procedure: Application of electrodes on relevant places and stimulation with TENS several times a day for ½ hour. Both high and low frequency stimulation can be applied.

Outcome: Pain reduction and increased physical activity.

Note: There is no need to take off the electrodes between each stimulation. When the client wears long trousers the connection from the electrodes to the apparatus can be adjusted inside trousers. The apparatus can be tucked away in the trouser pocket. Then the client can move around or go for a walk and control his TENS stimulation whenever needed.

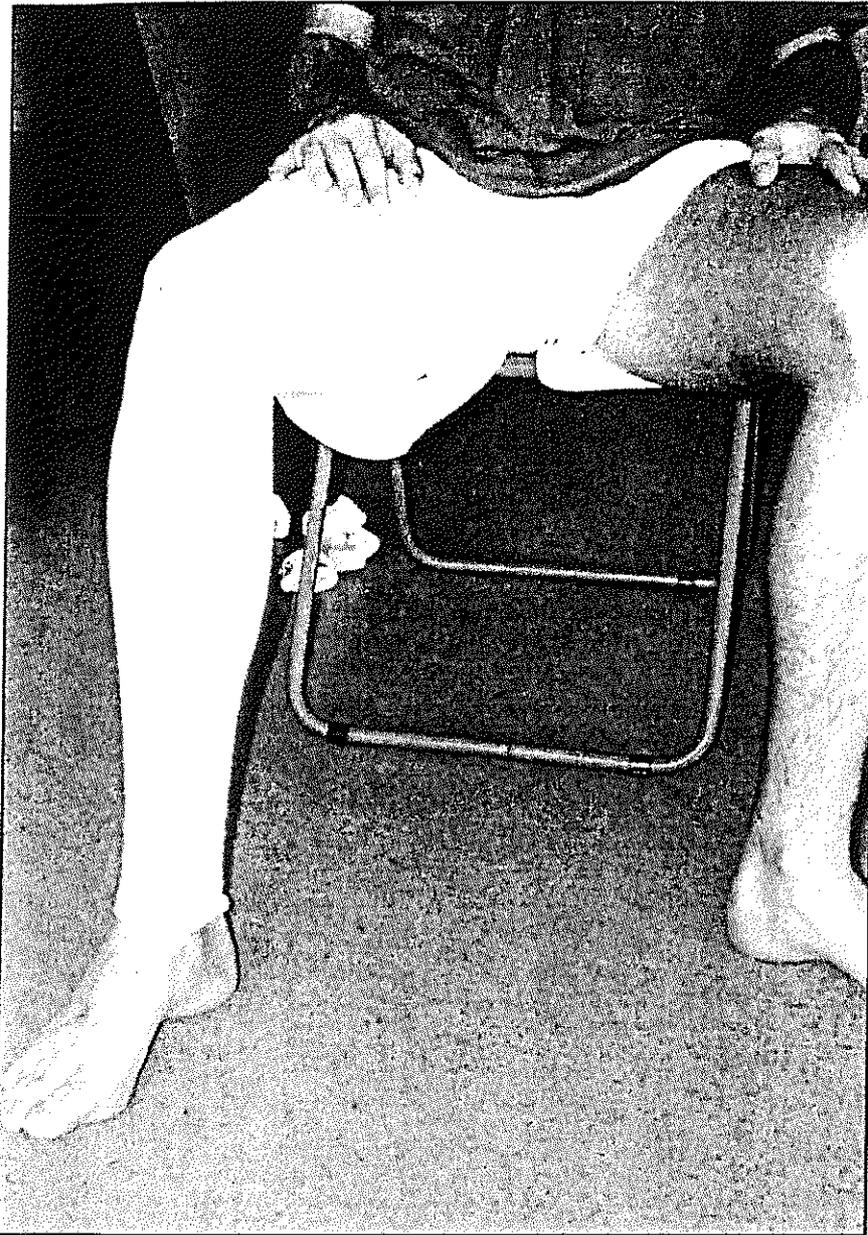


Fig. 54. Pain bandages.

Purpose: To relieve pain in the calves and legs.

Procedure: Apply elastic bandages, which give an even compression on the skin, the muscles and their fascia. The bandages may cover the calves and/or the legs.

The bandages should be used during the day and taken off at night.

Outcome: Pain reduction and increased walking distance and physical function.

3. Participation

The objective for training in groups is to enhance the client's ability to engage in participatory and meaningful social activities. The client should experience the body and actions to act as a possibility for development. His movement-potential gradually changes both in view of "expression of movement - and in action".

3.1 Training in participatory activities

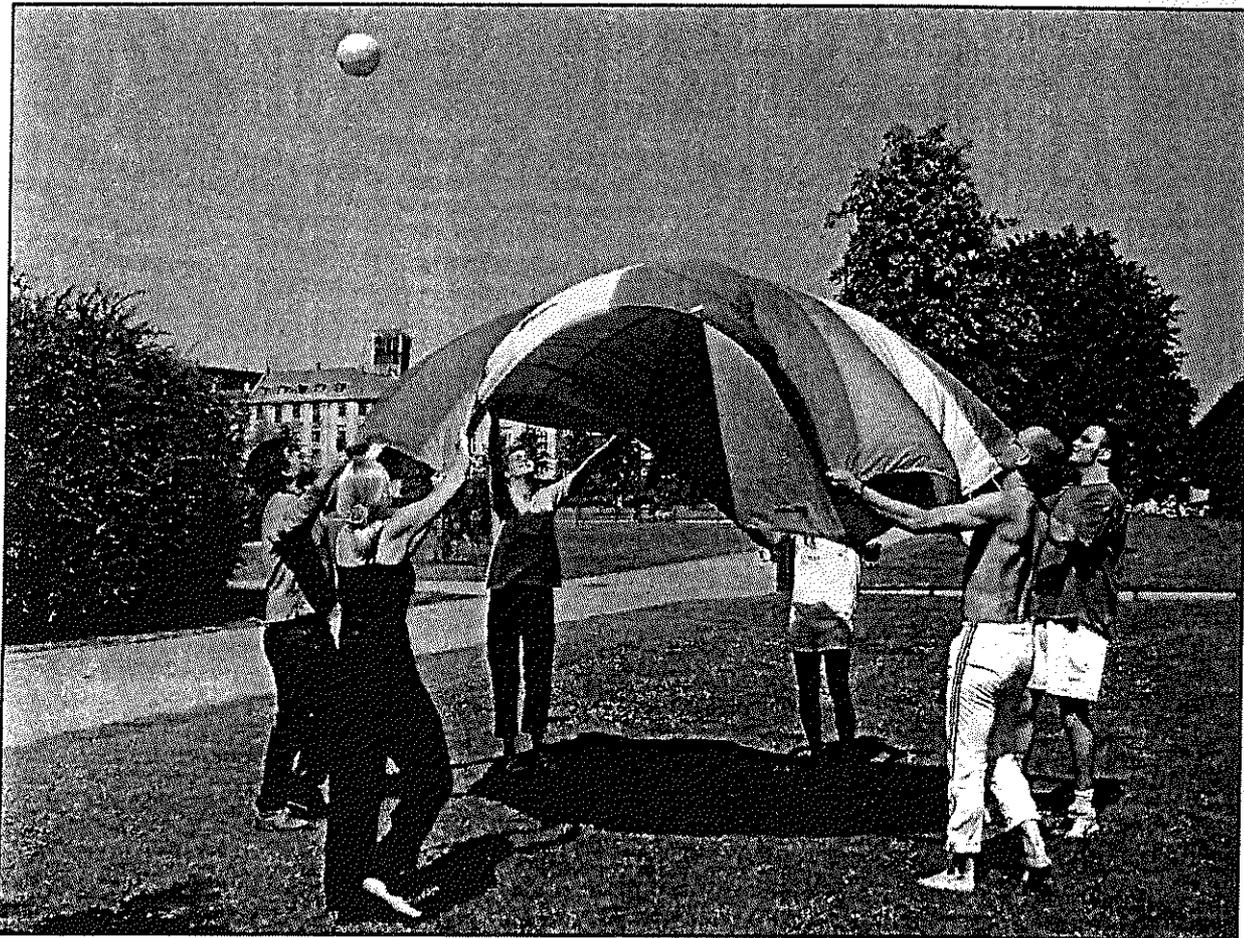


Fig. 55. Training in groups.

Purpose: Training in group activities.

Procedure: A group of client engages in group activities with the view to stimulate interaction, co-ordination and co-operation. The picture shows a group lifting a "parachute" from the ground and at the same time throwing a ball in the air.

Outcome: Experience of body potentials and ability to act.



Fig. 56. Training in groups.

Purpose: To participate in group activities, stimulating co-operation and interaction and co-ordination.

Procedure: The clients work together in pairs. Everybody tries to keep a ball moving at various parts of the body without letting the ball fall to the ground.

Outcome: Experience of body potentials and ability to act.

Conclusion

The chronic sequelae after falanga have a substantial impact on the every day life of the torture victim. The resultant, functional limitation, may lead to significant disability, such as the inability to work or to engage in social activities.

Disability is a complex phenomenon that incorporates physical pathology, the individual's response to the physical assault, and environmental factors that can serve to maintain the disability. Clinical assessment of disability should therefore concentrate on loss of function rather than pain. The question is not, "is that activity painful?", but rather "are you actually restricted in that activity?".

Assessment of a torture victim exposed to falanga should – in order to provide a goal oriented treatment – include:

- thorough physical examination - evaluation of impairment
- assessment of the ability to carry out structured activities - evaluation of functional capacity
- assessment of the impact on the lifestyle – evaluation of the caused disability

The recommended treatment modalities in this booklet are like a jig-saw puzzle. The therapist must put together the pieces in order to plan a treatment program, that is applicable to each particular client and based on the specific needs. Realistic and mutually agreed treatment goals are essential and must be established before the start of the treatment. The client should not expect total pain relief or full restoration of physical functions. Improvement of functional capacity - in order to diminish the resulting disability - should be the mutual aim.

Reference List

- (1) Amris K, Prip K. Chronic pain in torture victims. Possible mechanisms for the pain, and treatment. *Torture* 10, 73-77. 2000.
- (2) Amris K, Prip K. Physiotherapy for torture victims with chronic pain. Available treatment at the Rehabilitation Centre for Torture Victims (RCT). *Torture* 10, 112-117. 2000
- (3) Bennett MB, Ker RF. The mechanical properties of the human subcalcaneal fat pad in compression. *Journal of Anatomy* 171, 131-138. 1990.
- (4) Bojsen-Møller F, Flagstad KE. Plantar aponeurosis and internal architecture of the ball of the foot. *J.Anat.* 121,3, 599-611. 1976.
- (5) Bojsen-Møller F, Lamoreux L. Significance of free dorsiflexion of the toes in walking. *Acta Orthopaedica Scandinavica* 50, 471-479. 1979.
- (6) Bojsen-Møller F, Jørgensen U. The plantar soft tissues: functional anatomy and clinical applications. *M.Jahss*, 1991: 532-536.
- (7) Buschmann WR, Jahss MH, Kummer F, Desai P, Gee RO, Ricci JL. Histology and histomorphometric analysis of the normal and atrophic heel fat pad. *Foot and Ankle* 16 no.5, 254-258. 1995.
- (8) Dufek J, Bates BT. The evaluation and prediction of impact forces during landings. *Medicine and Science in Sports and Exercise* 22 no.2, 370-377. 1990.
- (9) Garrow AP, Papageorgiou AC, Silman AJ, Thomas E, Jayson MIV, Macfarlane GJ. Development and validation of a questionnaire to assess disabling foot pain. *Pain* 85, 107-113. 2000.
- (10) Giallonardo LM. Clinical evaluation of foot and ankle dysfunction. *Physical Therapy* 68 no.12, 1850-1856. 1988.
- (11) Graham CE. Painful heel syndrome: Rationale of diagnosis and treatment. *Foot and Ankle* 3 no.5, 261-267. 1983.
- (12) Johnston MR. Nerve entrapment causing heel pain. *Clinics in Podiatric Medicine and Surgery* 11 no.4, 617-624. 1994.
- (13) Jørgensen U. Achillodynia and loss of heel pad shock absorbency. *The American Journal of Sports Medicine* 13, no.2, 128-132. 1985.
- (14) Jørgensen U, Ekstrand J. Significance of heel pad confinement for the shock absorption at heel strike. *International Journal of Sports Medicine* 9, 468-473. 1988.
- (15) Jørgensen U, Bojsen-Møller F. Shock absorbency of factors in the shoe/heel interaction - with special focus on role of the heel pad. *Foot and ankle* 9 no.6, 294-299. 1989.

- (16) Katoh Y, Chao EYS, Morrey BF, Laughman RK. Objective technique for evaluating painful heel syndrome and its treatment. *Foot and Ankle* 3 no.4, 227-237. 1983.
- (17) Kerr PS, Silver DA, Telford K, Andrews HS, Atkins RM. Heel-pad compressibility after calcaneal fractures: ultrasound assessment. *The Journal of Bone and Joint Surgery* 77-B, 504-505. 1995.
- (18) LeMelle DP, Kisilewicz P, Janis LR. Chronic plantar fascial inflammation and fibrosis. *Clinics in Podiatric Medicine and Surgery* 7 no.2, 385-389. 1990.
- (19) Lewit K. Manipulative therapy in rehabilitation of the locomotor system. Butterworth & Co. Ltd., 1985.
- (20) Light LH, McLellan GE, Klenerman L. Skeletal transients on heel strike in normal walking with different footwear. *J.Biomechanics* 13, 477-480. 1980.
- (21) Lutter LD. Foot-related knee problems in the long distance runner. *Foot and Ankle* 1 no.2, 112-116. 1980.
- (22) McLellan GE, Vyvyan B. Management of pain beneath the heel and Achilles tendinitis with visco-elastic heel inserts. *Brit.J.Sports Med.* 15 no.2, 117-121. 1981.
- (23) Michael RH, Holder LE. The soleus syndrome. *The American Journal of Sports Medicine* 13 no.2, 87-94. 1985.
- (24) Miller W E, Lichtblau P O. The smashed heel. *Southern Medical Journal* 58, 1229-1237. 1965.
- (25) Miller W E. The heel pad. *The American Journal of Sports Medicine* 10, no.1, 19-21. 1982.
- (26) Mubarak SJ, Gould RN, Lee YF, Schmidt DA, Hargens AR. The medial tibial stress syndrome. *The American Journal of Sports Medicine* 10 no.4, 201-205. 1982.
- (27) Na HS, Yoon YW, Chung JM. Both motor and sensory abnormalities contribute to changes in foot posture in an experimental rat neuropathic model. *Pain* 67, 173-178. 1996.
- (28) Oatis CA. Biomechanics of the foot and ankle under static conditions. *Physical Therapy* 68 no.12, 1815-1821. 1988.
- (29) Oh SJ, Kwon KH, Hah JS. Lateral plantar neuropathy. *Muscle and Nerve* 22, 1234-1238. 1999.
- (30) Peterson L, Renström P. Sports injuries. Their prevention and treatment. London: Martin Dunitz Ltd., 1986.
- (31) Prichasuk P, Mulpruek P, Siritwongpairat P. The Heel-pad compressibility. *Clinical Orthopaedics and Related Research* 300, 197-200. 1994.
- (32) Riegger CL. Anatomy of the ankle and foot. *Physical Therapy* 68 no.12, 1802-1814. 1988.

- (33) Rodgers MM. Dynamic biomechanics of the normal foot and ankle during walking and running. *Physical Therapy* 68 no.12, 1822-1830. 1988.
- (34) Savnik A, Amris K, Røgind H, Prip K, Danneskiold-Samsøe B, Bojsen-Møller F et al. MRI of the plantar structures of the foot after falanga torture. *European Radiology* 10, 1655-1659. 2000.
- (35) Slocum DB. The shin splint syndrome. *American Journal of Surgery* 114, 875-881. 1967.
- (36) Smart GW, Taunton JE, Clement DB. Achilles tendon disorders in runners - a review. *Medicine and Science in Sports and Exercise* 12 no.4, 231-243. 1980.
- (37) Snook GA, Chrisman DO. The management of subcalcaneal pain. *Clinical Orthopaedics and Related Research* 82, 163-168. 1972.
- (38) Thomsen AB, Eriksen J, Smidt-Nielsen K. Chronic pain in torture survivors. *Forensic Science International* 108, 155-163. 2000.
- (39) Tiberio D. Pathomechanics of structural foot deformities. *Physical Therapy* 68 no.12, 1840-1849. 1988.
- (40) Torg JS, Pavlov H, Torg E. Overuse injuries in sport: the foot. *Clinics in Sports Medicine* 6 no.2, 291-320. 1987.
- (41) Travell JG, Simons DG. Myofascial pain and dysfunction. The trigger point manual. Baltimore: Williams and Wilkins, 1983.
- (42) Turgut A, Göktürk E, Köse N, Seber S, Hazer B, Günal İ. The relationship of heel pad elasticity and plantar heel pain. *Clinical Orthopaedics and Related Research* 360, 191-196. 1999.
- (43) Vlaeyen JWS, Linton SJ. Fear-avoidance and its consequences in chronic musculoskeletal pain: a state of the art. *Pain* 85, 317-332. 2000.
- (44) Voloshin A, Wosk J, Brull M. Force wave transmission through the human locomotor system. *J.Biomechanical Engineering* 103, 48-50. 1981.
- (45) Warren BL. Plantar Fasciitis in runners. Treatment and prevention. *Sports Medicine* 10 no.5, 338-345. 1990.
- (46) Welsh PR, Clodman J. Clinical survey of Achilles tendinitis in athletes. *Canadian Medical Association Journal* 122, 193-195. 1980.
- (47) Wolgin M, Cook C, Graham C, Mauldin D. Conservative treatment of plantar heel pain: Long-term follow-up. *Foot and Ankle* 15 no.3, 97-102. 1994.
- (48) Woolf CJ, Donbell TP. The pathophysiology of chronic pain - increased sensitivity to low threshold A β -fibre inputs. *Current Opinion in Neurobiology* 4, 525-534. 1994.