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THERAPY GUIDE

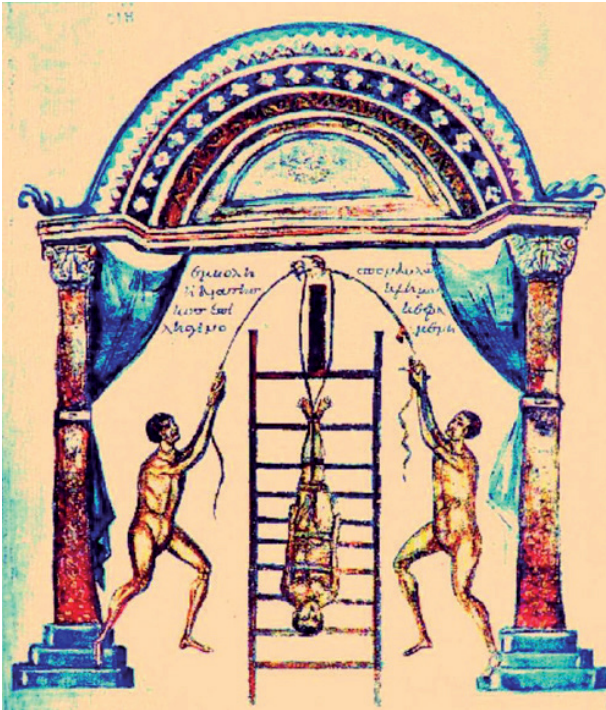


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Traction therapy in general



History

Since Antiquity medical men including Glisson in the 17th century and Erasmus Darwin at the end of the 18th century, among several other physicians were applying traction for certain spinal disorders. By the end of the 18th century it had proved to be useful. In 1789 Jean Andre Venel introduced the 'lit a extension' the extension bed for scoliosis treatment by traction and countertraction in the horizontal position.

In 1810 the german physician Schreger developed the modern looking spinal traction bed. This was even more complicated than state of the art 20th century models.

Early 20th century the main indication for spinal traction became the reduction of deformalities after different spinal column injuries. Horizontal or diagonal traction with carefully applied weights control replaced vertical suspension in which the main weight was the weight of the patients body.

In practice, traction is mainly used in cervical spine management. Spinal traction for the treatment of low back is now used as a form of spinal manipulation of the lumbar and thoracic spine.

Modern traction devices are used today in conjunction with special traction treatment benches. The traction device is generally connected to the table by means of a universal attachment plate. To ensure safety, a patient interrupt button should be included.

Traction therapy in general

Clinical background

For the treatment of non-specific neck pain and cervical radiculopathy, traction is usually provided as an addition to other therapies. Observations from the meta-analyses in clinical studies indicate that traction has significant effects on short- and mid-term pain.

Seeing the limited number of adverse events and adverse effects reported for traction being on par for those reported for other therapies, cervical traction is deemed safe.

On lumbar traction, the current clinical view is that most people with low back pain or lumbar radiculopathy/sciatica will positively react on physical therapy including traction, exercises, and manual therapy. If back pain persists after 4-6 weeks, it is recommended to intensify the physical therapy.

Peripheral traction (traction on the limbs) is well known to put tension on a displaced bone or joint, such as a dislocated shoulder. The tension helps put the joint back in position and keep it still. Traction on arm or leg is also a proven method for broken bones, and often used as pre-operative treatment.

Using skeletal traction can help realign bones when fractures are unstable. Traction on limbs is used in rehabilitation management to keep a group of muscles stretched to reduce muscle spasms.

Summarized; traction can provide benefits as pain reduction and functional improvement for patients with non-specific neck pain, radiculopathy (both cervical or lumbar), nerve root compression, spinal stenosis, degenerative cervical myelopathy, sciatica, herniated intervertebral disc (lumbar, lumbosacral, cervical) and spondylosis.



Mechanism of action



Traction can be described as „a mechanical force, pulling apart joint-forming bone pieces. It's mainly used in disorders of the cervical spine the lumbar spine the pelvis and the extremities.

Traction creates a lengthening of the spine, flattening of the lordosis and enlargement of the intervertebral space. The lengthening (enlargement) of the spine is believed to play a central role in the effects of traction therapy and can still be present up to two hours after stopping a treatment. Lengthening of the spine in combination with flattening of the lordosis reduces the excitation of intrafusal muscle fibers.

This has a relaxing effect and reduces muscle tension. This effect seems to occur with both continuous and intermittent traction therapy.

Cyriax noted in a bulging nucleus pulposus that enlargement of the intervertebral space creates what is known as an intradiscal pressure drop. This causes a suction effect, which sucks the nucleus pulposus back into the intravertebral space.

A disc and capsule entrapment can be lifted by increasing the intervertebral space, allowing the joint surfaces to slide past each other again.

Enlargement of the intervertebral space, as mentioned earlier, causes an intradiscal pressure drop. This causes a fluid suctioning effect, and the improved moisture balance is maintained even after the traction treatment.

Treatment with the *clTrac*

Before starting a treatment:

1

Determine the body weight of your patient. Many studies and guidelines assume a certain percentage of the patient's weight as the base force for traction.

5

After all the settings are completed, the treatment can be started. To enable this, the start button must be 'released'. This is done by pressing the patient interrupt button once. The clinician can do this, but it is recommended that the patient does it. In this way the patient can determine the pressure sensitivity of the button prior to the treatment.

2

The patient should lie down in a relaxed position on the traction table. Then attach the necessary fixation belts.

6

The therapy is now started by pressing the start button on the user interface. Make sure that the patient always has the patient interrupt button in his hand during a treatment.

3

Connect the traction cord to the fixation device and give the patient the patient interrupt button.

7

Always maintains a view of the patient during treatment. If an unwanted or too strong side effect occurs, the treatment should be stopped.

4

Select the traction method and set all parameters as desired.



Traction can be continuous or intermittent. Continuous traction will allow quieting of the stretch reflex and decrease muscle guarding.

It will also allow separation of the posterior structures if maintained for at least 7 seconds at a time. Intermittent traction is considered to act by cyclically causing muscle contraction and relaxation thereby increasing blood flow in a massage like action.

Before using the *clTrac* on a patient, the user should become acquainted with the Manual and individual treatment methods as well as the indications/contraindications, warnings, and application information.

Additional sources of information about types of therapy should be consulted.

The *clTrac* is designed to be used with traction tables, equipped with a universal mount. Please read the *clTrac* Instructions for Use, chapter 6; device set up and the manual of the traction table before mounting the device.

Indications



Traction is indicated for the general clinical use in case of musculoskeletal or neurological impairments of the spine. The objective is to relieve peripheral radiation/sciatica and pain. Traction is a widely used treatment for neck and low back pain and it is typically provided in combination with other treatment modalities and an exercise program.

The cl**Trac** is a traction device for separating the cervical, thoracic or lumbar vertebrae along the inferosuperior axis of the spine by using a mechanical force.

The clTrac may be used to relieve peripheral radiation/sciatica and pain associated with:

- Protruding discs
- Spinal root impingement
- Bulging discs
- Hypomobility
- Herniated discs
- Degenerative joint disease
- Degenerative disc disease
- Facet syndrome
- Posterior facet syndrome
- Compression's fracture
- Acute facet problems
- Joint pain
- Radicular pain
- Discogenic pain
- Prolapsed discs

For an exact overview of indications, contraindications and side effects please read the FAQ of this treatment guide and the manual of the cl**Trac**.

Treatment recommendations

The following treatment recommendations can be selected:

- Cervical traction (static or intermittent)
- Lumbar traction (static or intermittent)
- Peripheral traction (static or intermittent)

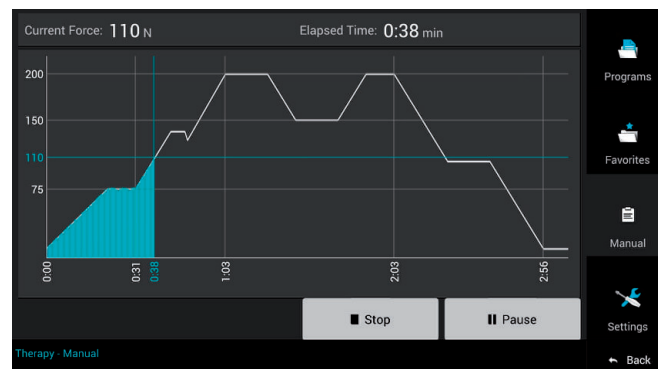
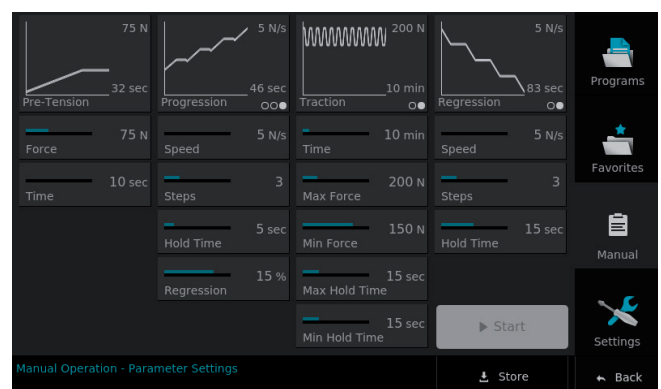
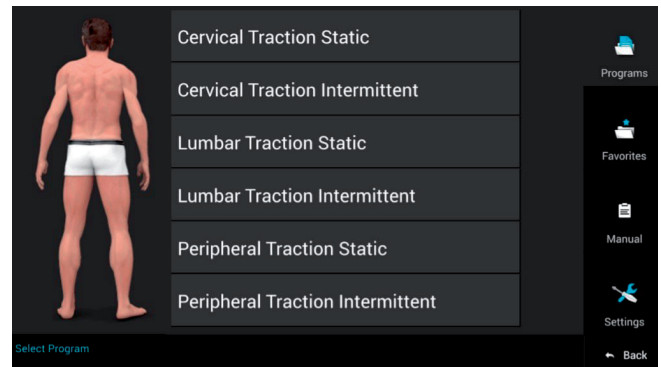
Traction, when properly applied, is a very effective treatment modality. For an overview of the steps to be followed, refer to the Instructions for use from the cl**Trac** and chapter Treatment with the cl**Trac** of this treatment guide.

Note: the preprogramed parameters are based on the clinical studies from the clinical evaluation of this device. Nevertheless, it is possible and often desirable to adjust the parameters to the specific treatment goals, the physical characteristics of the patient and/or the preferences of the practitioner.

In the overview of the treatment parameters, in between () the abbreviations have the following meaning:

- N: Newton
- S: Seconds
- N/S: Newton per second
- %: Percentage
- M: Minutes

Note: in the Settings of the cl**Trac** units can be set to Newton (N), Kilogram (Kg) or Pound (P). Please refer to chapter 6, Device set up in the Instructions for Use.



Treatment recommendations

Cervical traction

Cervical traction static

Pretension	Force (N)	20
	Time (S)	15

Progression	Speed (N/S)	10
	Steps	1
	Hold Time (S)	5
	Regression (%)	10

Traction	Time (M)	4
	Max Force (N)	200

Regression	Speed (N/S)	10
	Steps	1
	Hold Time (S)	5

Cervical traction intermittent

Pretension	Force (N)	50
	Time (S)	30

Progression	Speed (N/S)	50
	Steps	2
	Hold Time (S)	10
	Regression (%)	10

Traction	Time (M)	8
	Max Force (N)	200
	Min Force (N)	150
	Speed (N/S)	15
	Max hold time (S)	45
Min hold time (S)	45	

Regression	Speed (N/S)	50
	Steps	2
	Hold Time (S)	10



Treatment recommendations

Lumbar traction

Lumbar traction static

Pretension	Force (N)	10
	Time (S)	30
Progression	Speed (N/S)	10
	Steps	3
	Hold Time (S)	10
	Regression (%)	10
Traction	Time (M)	6
	Max Force (N)	500
Regression	Speed (N/S)	10
	Steps	3
	Hold Time (S)	10

Lumbar traction

Lumbar traction intermittent

Pretension	Force (N)	15
	Time (S)	60
Progression	Speed (N/S)	50
	Steps	4
	Hold Time (S)	15
	Regression (%)	10
Traction	Time (M)	10
	Max Force (N)	500
	Min Force (N)	450
	Speed (N/S)	15
	Max hold time (S)	45
	Min hold time (S)	45
	Regression	Speed (N/S)
Steps		4
Hold Time (S)		15



Treatment recommendations

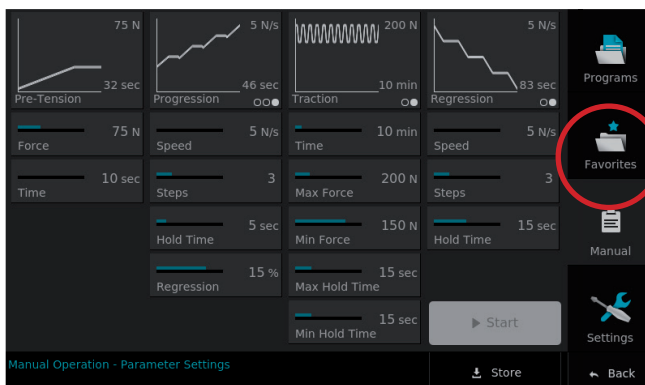
Peripheral traction

Peripheral traction static

Pretension	Force (N)	70
	Time (S)	20
Progression	Speed (N/S)	20
	Steps	5
	Hold Time (S)	5
	Regression (%)	10
Traction	Time (M)	5
	Max Force (N)	300
Regression	Speed (N/S)	5
	Steps	1
	Hold Time (S)	20

Peripheral traction intermittent

Pretension	Force (N)	10
	Time (S)	40
Progression	Speed (N/S)	30
	Steps	6
	Hold Time (S)	8
	Regression (%)	20
Traction	Time (M)	7
	Max Force (N)	300
	Min Force (N)	250
	Speed (N/S)	15
	Max hold time (S)	45
Regression	Speed (N/S)	30
	Hold Time (S)	8



In addition to the 6 preset protocols, the user can also define his own treatment protocols. For an exact overview of all settings, refer to Chapter 8, operation instructions of the manual.

Precautions and contraindications

Caution is indicated in the case of persons:

- With sensory disturbances
- With strong autonomic dysfunction
- With osteoporosis
- Who are under the influence of drugs and/or alcohol
- The device may not be used on injured skin or mucous membranes.

Contraindications

Traction therapy is contra-indicated in patients with:

- Structural disease secondary to tumor or infection
- Patients with vascular compromise
- Any condition for which movement is contraindicated
- Patients with acute strains, sprains, and inflammation which would be aggravated by traction therapy
- Patients with joint instability of the spine
- Pregnancy
- Osteoporosis
- Hiatus hernia
- Claustrophobia
- Cardiac or pulmonary problems

Side effects

Spinal traction can cause minor muscle spasms. Direct after the treatment the patient can experience some dizziness. If traction belts are applied directly to bare skin, skin irritation may occur. Short after the treatment patients can experience some pain in the treated areas.

Residual risks

If the device is used within its intended purpose, no other unacceptable residual risks are known besides the contraindications, the side effects and the warnings already mentioned.

For a complete list of indications, contraindications, side effects and warnings, refer to the cITrac manual.



Accessories

Thoracic belt



Pelvic belt



The traction table shown in the photo is the

Flexistool with separate height adjustment for each leg

Saunders cervical traction device

Adjustable Arm



AxionXelect Tractiontable.

Maximum Adjustability



The adjustable device arm is laterally rotatable over 180 degrees. This allows optimal performance of both lumbar and/or peripheral traction.

The aXionXelect tractiontable is equipped with a horizontally movable lumbar section. This can move over 15 cm, which allows an almost frictionless treatment.

What side effects of traction are known?

Spinal traction can cause minor muscle spasms. Direct after a treatment the patient can experience some dizziness.

If traction belts are applied directly on bared skin, skin irritation may occur. Short after the treatment patients can experience some pain in the treated area.

Can I treat young persons, children?

Yes, its allowed to treat children. Important is that they are capable to express themselves orally with respect to the effects of the therapy.

What knot is used in the traction cord?

This is what is known as a double octahedron knot; also called a backstopped octagonal knot.

If you're not familiar with this knot, and need to have it knotted again, please contact your local distributor or sales agent.

When should the traction cord be replaced?

We recommend having this replaced annually.

It is also important to regularly inspect the traction cord for damage. If the cord is damaged, even slightly, it should be replaced by your local distributor or sales agent.

What kind of tables can be used in combination with the cITrac?

The cITrac can only be used as intended when properly fixed to a traction table or other fixture which can withstand at least 1100 N. The table or fixture must be intended to be used with a traction device such as cITrac and must provide fixture options matching to those provided by cITrac. Please refer to its manufacturer's specifications and instructions for use and observe the respective information and warnings given therein. Please pay special notice to the maximum allowed traction force.

What kind of accessories can be used in combination with the cITrac?

The cITrac can only be used as intended when combined with an harness with traction as intended purpose.

The harness must be intended to be used with a traction device such as cITrac and must be able to be connected to cITrac's traction cord. Please refer to its manufacturer's specifications and instructions for use and observe the respective information and warnings given therein.



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Image Source references

Page 4; early Greek traction device;
Van contractie naar actie, Published by Bohn,
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Note:

Please also always follow the instructions for use for the enShock device. The device may only be operated or used by skilled and specially trained operators.

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Zimmer MedizinSysteme GmbH
Junkersstraße 9
89231 Neu-Ulm, Deutschland
Tel. +49 7 31 97 61-0
Fax +49 7 31 97 61-118
info@zimmer.de
www.zimmer.de

Zimmer
MedizinSysteme

