

# A Study of Inversion Traction Therapy: for Lower Back Pain Problems

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**Abstract:-** Since our birth and throughout our lifetime, we struggle a constant warfare against a downward compressive force of nature known as gravitational force. Some negative effects of gravity will effects on spine due to compression which causes back pain and many other problems related to spine such as Herniation of disc, Sciatica, Scoliosis etc. to overcome these Inversion therapy, which is known treatment method for scoliosis, one of many muscles disease. Inversion therapy has been used since Hippocrates introduced it. Inversion traction therapy involves being upside down or at an inverted angle while hanging by the legs, ankles, or feet with the intention of therapeutic benefits. Inversion traction therapy performs gravity traction on spine to shoot back pain and it gives many health benefits.

**Keywords:-** Lower Back pain (LBP), Inversion traction therapy (ITT), Herniation of disc, Spine disease.

## I. INTRODUCTION

Lower back pain (LBP) due to disc disease, is one of the major difficulty in modern life and also it is a major cause of lost working days and health expenditure. Surgery is a well-established option in the diagnosis management flowchart. There is no such a strong evidence proving that surgery for sciatica is effective [1]. Especially in Industry sector, Degenerative lumbar disease is a major cause of disability and health expenditure [2] [3]. Hebert et al. [5] reported that 70–85% of the adult population will have experienced LBP at some point in life. Also, LBP is the most common cause of limitation in activity in those younger than 45 years of age, and that prevalence rates are shown to range 12–35%. Compression on Nerve root causes mostly Back pain and other complicated spine diseases like Slip Disc or Herniation Disc, Scoliosis, Sciatica, Spasm stress, nerves muscle pain, etc. In present days on these problems there are two types of treatments existing, 1. Surgical Treatment and 2. Non-Surgical treatment. Mostly the surgical treatments often fails to eliminate complications, [4] even after treatment problems like herniation disc arises after some period of time, although it is expensive treatment. Some non-surgical treatments reduce back pain but not disabilities related to it. [6] That's why there is need of alternative remedies to cure these spine problems. Inversion traction therapy concept can give all remedial benefits of spine and other Health benefits in one set up. Inversion therapy is good alternative for spine related disease it is proved by some medical studies. Inversion therapy can accomplish by Inversion table or invertchair, The inversion condition cause gravitational pressure to be placed

on the nerve roots, resulting in shooting pains in the back, buttocks, legs and feet. During inversion therapy, your body will rotate upside down position to increase the space and reduce pressure between the vertebrae and nerve roots, it gives decompression to the spine so that the problems of Back pain which arise due to compression, will be overcome.

## II. INVERSION THERAPY

Inversion therapy involves being human body laid in position upside down or at an inverted angle while hanging by the legs, ankles, or feet with the intention of therapeutic benefits. Since from Ancient times, Inversion traction therapy is used for our health benefits. In 3000 BC the human use Yoga inversion poses it shows on the first drawings discovered by Archaeologist. They use value of inverted poses of body to re-balance body, to increase blood circulations, stimulate brain, relives pressure on abdominal organ. In 400 BC The Father of Medicine, Hippocrates hoists up a patient on ladder with ropes and pulley to harness the force gravity in an effort to stretch patient and relieve their ailments.

Inversion therapy is used to cure back pain caused by degenerative or herniated discs, spinal stenosis or other spinal conditions. The inversion condition cause gravitational pressure to be placed on the nerve roots, resulting in shooting pains in the back, buttocks, legs and feet. Inversion traction therapy involves human body being laid upside down or at an inverted angle while hanging by the legs, ankles, or feet with the intention of therapeutic benefits of gravity force. This helps to increase the space and reduce pressure between the vertebrae and nerve roots. Inversion traction table is an adjustable platform which allows positioning in an upright or inverted position in order to allow the effects of gravity to meet requirements to cure the disorders related to spine. Frederick Sheffield designed a tilt table with a highly-polished slippery top on which the patient was attached by a pelvic harness. By tilting the table head down or inverted.

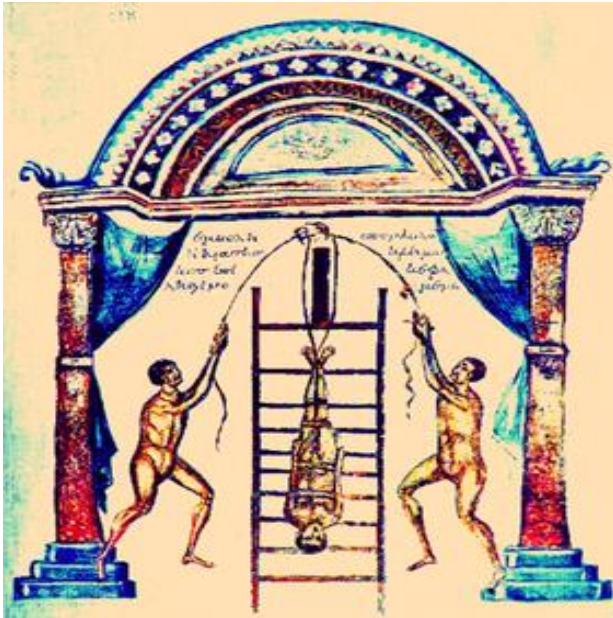


Fig.1: Yoga inversion poses first drawings Discovered by Archaeologist in 3000 BC



Fig.2: Inversion traction table

The efficiency and benefits from inversion traction therapy define a broad measure of patients and conditions. Patients who present with numerous conditions such as herniated or bulging discs, sciatica, scoliosis, muscle spasm, can benefit from inversion. Inversion therapy can result in a minimization of pain, realignment of the vertebrae, rehydration of the intervertebral discs, relaxation of the muscles and reduction of recovery time. In addition to these direct benefits, the use of inversion also has been shown to stimulate venous return and the lymphatic system; stimulate the autonomic nervous system and its bar receptors; increase in blood circulation rate; increase oxygen flow rate to the brain; it help maintain our original body shape and avoid prolapsed internal organs; it help to maintain correct body posture; and contribute to overall general good health-life.[1]

*Benefits of inversion traction therapy for health:*

Inversion traction therapy helps to cure following some back pain problems

1. Decrease: Back pain. Compression on discs. Nerves Muscle pain. Spasm Stress. Tension Unwanted effects of ageing.
2. Increases: Blood Circulation rate, Lymph drainage, Relaxation of muscles, Mobility of the spine, Joint mobility and Flexibility
3. Herniation Disc or Slip Disc: It is a medical condition affecting the spine in nucleus pulpous which act as cushion for shock absorption is bulging out beyond damaged outer ring of vertebrae. ‘Slipped disc’ used to describe a low back injury. Disc does not actually slip. Rather, they may herniated or bulge out from between the bones. A herniation is displaced fragment of the centre part of the disc that is pushed through a tear in the outer layers or annulus of the disc. Pain results when irritating substance are released from tear and also if the fragment touches or compress a nearby nerve. Herniation disc common in the low back or lumbar spine. [17]

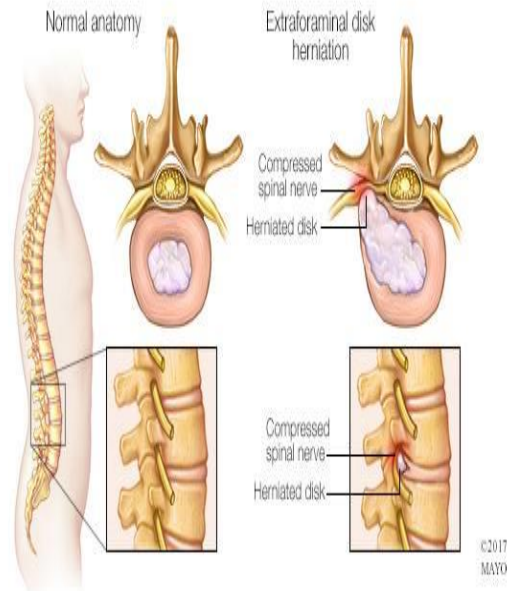


Fig 3. Herniation of disc or slip disc

4. Sciatica: It is pain caused by compression or irritation of five spinal nerve roots of each sciatica nerve. It causes lower back pain, leg pain buttock pain or weakness in various parts of leg.[17]

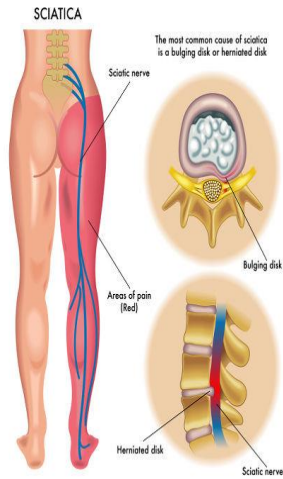


Fig 4. Sciatica

5. Scoliosis: It is medical condition in which a person's Spine is curved from side to side.[17]

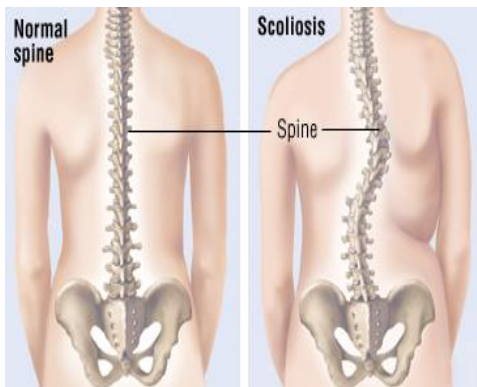


Fig 5. Scoliosis

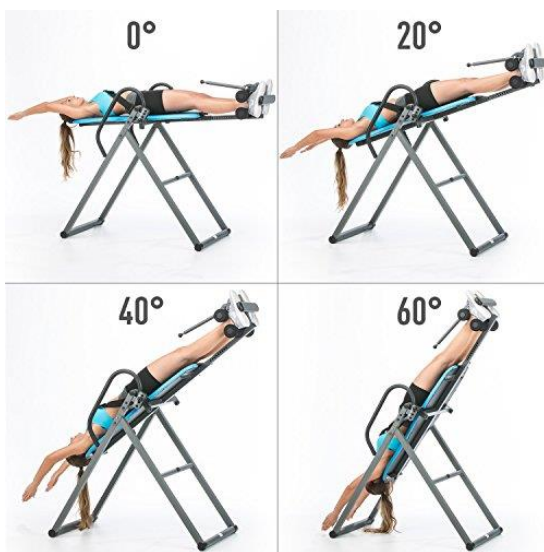


Fig 6. Inversion traction therapy with different angle position

Above fig. shows various angled position of inversion traction therapy from that various angled position 60° position is more effective and beneficial.

### III. MEDICAL STUDIES

1. In present the area of concern for today's patients, health-care suppliers and providers is to avoidance of surgical treatments. The cost of back surgery is in dollars and cents as well as there is loss of job time, not to mention the percentage of failed surgeries that can compound the problem for both the patient and the physician.[1] In year 1987 there were 14 million paid sick-days for low back pain (LBP) in Sweden, a nation with million inhabitants. However, 70% of the sick-periods were shorter than 10 days. Out of 6600 filed workers compensations claims in 1988, 4100 were due to LBP. An estimated 15% of all sick-days in USA in early 1980s were due to lower back pain (LBP). Obviously LBP is one of the major problem for modern society and industry sector.[6][9]
2. Nachemson study measured internal disc pressure (in 3rd lumber disc) through various daily activities like standing, sitting, bending, and vertical spine traction.[7][9]
3. A preliminary study, from Newcastle Hospital, shows evidence that regular use of an inversion table may significantly reduce the need for back surgery. In this study, patients who were told that they needed surgery to relieve sciatica were divided into two groups. One group regularly practiced inversion along with traditional physical therapy, while the other group received physical therapy only. The results showed that the patients in the inversion group were 70.5 per cent less likely to require surgery.[8]
4. The Dr.Sheffield / Volvo mentioned in his study 175 patients who were unable to work due to back pain were treated. After the eight inversion traction therapy treatments, 155 patients were able to return to their jobs full time. This Study concluded that the main basis for improvement was the stretching of paraspinal vertebral muscles and ligaments and possibly the widening of intervertebral discs. Study found significant improvements in a variety of diagnosis including herniated or bulging discs, lumbar osteoarthritis with sciatica, and muscle spasm. Patient experienced traction in a modified hip flexed position. It is worth noting that previous to his use of inversion therapy, Dr. Sheffield regularly used mechanical traction with weights and pulleys. He considered inverted traction therapy much more effective than mechanical traction. [10]
5. Noss study found EMG activity (an indicator of muscle pain ) reduce by 35% within the first 10 seconds of inversion also found that it increases the spinal length, and there is relation in EMG activity and an increase in spinal length. [11]

6. Kane .M. et.al. Study found that gravity-facilitated traction (inversion) generates intervertebral separation in lumbar spine and it is beneficial to overcome back pain related problems. [12]
7. Dimberg et.al. Concluded experimentally in his study in which they were enrolled 116 people in the randomized controlled trial which tested for 12 months period. A randomized controlled trial with two training groups and one control group was conducted to assess the effect of gravity inversion on pain level and absenteeism due to LBP. Average age = 44 years. 77% men Group 1: used inversion for 10 minutes 1/day Group 2: used inversion for 10 minutes 2/day Group 3: control group Results after 12 months of training program. 1. The employees in Group 1 and 2 decreased sick days due to back pain by 33%. 2. Average sick days to due back pain fell by 8 days per individual in the treated group. 3. "Inversion traction therapy is an efficient and cheap way to improve employee health and possibly reduce sick leave costs to the employer." [13][14]
8. Gianakopoulos study found all subjects experienced intervertebral separation of lower lumbar vertebrae. This study conclude that although mechanical traction has been used for centuries but only gravity-assisted traction (inversion) offers an effective for back pain problems.[17]. Many soldiers use inversion table to help recover from brutal workouts & stenous conditions.

#### IV. CONCLUSION

Inversion traction therapy (ITT) would reduce the need for a surgical procedure in subjects with sciatica and other back pain problems; it gives the alternate way of treatment over surgical treatment. The results of these studies do support this therapy; expensive surgery was avoided and many back pain problems reduced due to application of inversion traction therapy (ITT). Inversion traction therapy in which upside down position also has many health benefits for human body. So it concludes that Inversion therapy concept is an alternate and effective approach tool towards Back pain problems.

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