

# Newer Physical Medicine Trends in the Conservative Management of Low Back and Neck Pain

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## ABSTRACT

Published on 29<sup>th</sup> June 2009

Back pain afflicts a high percentage of individuals. The methods of evaluation and management vary from time to time. The present methods and the recent developments like electrotherapy and laser are described in detail.

**Keywords:** Back pain, Conventional methods, Electrotherapy, Laser

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More than 80% of human beings experience back pain at least once in their life time. It is not only the number one cause of absenteeism from work, but also the 8<sup>th</sup> common cause of doctor visit. The good thing is that 80 to 90% recover in a week time. But 1% of population is suffering from debilitating chronic back pain that affects their activities of daily living. It means more than 12 million people in our country is badly in need of medical or surgical help. Only a small percentage is truly indicated for surgery. Hence exploring, researching and implementing newer methods and gadgets are very important in managing back pain syndromes.

Major causes of back pain are postural, disc related dis eases , facet syndrome, vertebral degeneration and lumbar canal stenosis.

Pharmacological approach to back pain syndromes has shifted from conventional NSAIDS to Pregabalin & Gabapentin (anti-epilepticals) Epirisone, thiocolchiside & Cyclobenzaprine (newer muscle relaxants) and sustained release tramadol and Fentanyl patches (Narco-analgesics).

Rehabilitation of chronic back pain sufferers is best done by Physical Medicine and Rehabilitation specialists "Physiatrists" when available.

Conventional Physical Therapy units employ the following modalities for managing back pain.

- Lumbar and cervical traction
- Heat pads, moist heat and IR lamps
- Short Wave Diathermy and Ultra sonic therapy

- TENS and Interferential currents

Most of these are decades old and now advancements are available in each field.

Regarding the benefit of traction, US AHCPR committee in 1994 could not prove it after reviewing 41 articles published between 1952 and 1994.

But conventional traction metamorphosed to Distraction through Vertebral Axial Decompression (VAX-D) -1991 Decompression, Reduction and stabilization (DRS) to Inter-vertebral Differential Dynamic (IDD) therapy-1999. Many articles have been published since 1994 depicting the effect of these newer distraction techniques.<sup>1,2,3,4,5,6</sup> Machines employing distraction techniques are superior in three aspects. Patient comfort level is improved with non-slip movable split table, ergonomically designed harness and pneumatic pelvic support. Secondly the level of distraction needed can be targeted (L4-5 or L5S1 etc) more accurately by adjusting the angle of pull done by the computer. In conventional traction, the spine is pulled as a whole and it can lead to protective spasm of para spinal muscles. Finally the mechanical pull is replaced with microprocessor controlled rhythmic distraction. The advantage being avoidance of protective muscle spasm and that helps to deliver the effect deep to produce a negative pressure at the discal level.<sup>7</sup> The vacuum effect helps in receding the prolapsed disc (in 20 to 30% cases) and re-hydrates the nucleus pulposes (65%) as evidenced by bright T2 weighted images in post treatment MRIs.<sup>8</sup> Some of these devices are Acu-spina, Da-vinci and DRX 9000.

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Conventional electrotherapy machines employ currents varying from 2 Hz to 250 Hz (TENS) and 4000 to 4100 (Interferential currents). The principle is activation of inhibitory inter-neurons and blocking of the pain path ways (Wall & Melzak). The Na<sup>+</sup> - K<sup>+</sup> pump controlled ionic equilibrium in and around a normal cell changes when injury happens that leads to abnormal electrical discharge. Depending on the type of nerve fiber stimulated, the quality and quantity of pain varies. Sometime the pain is deep seated and cutaneous stimulation may not be sufficient to block these pathways.

Now machines are available that incorporates different forms of current from 2 to 20000 Hz and programmable to deliver multiple frequencies and intensities without interruption. High frequency currents act as carriers to deliver optimum currents to block deep seated pain sensitive structures like ganglions. These currents called electroceutical currents. They are effective in relieving deep seated pain syndromes like radiculopathies and effects are long lasting.<sup>9,10</sup>

Lasers are widely used in Medicine since 1996. Physio Lasers of low intensity (up to 500 mW) and wavelengths (class III) ranging from 300 to 900 nm have been used in European world for the past two decades to treat musculo-skeletal pain and Osteoarthritis.<sup>11,12</sup> They are not powerful enough to pierce more than a few mm. FDA recently approved class IV lasers of high intensity (up to 15,000 mW) for use in Physiotherapy to treat deep seated structures like facet and hip joints.

The effects of Lasers are

- Delivers high energy Photons that provide energy to repair and promote Angiogenesis.
- Photo-Mechanical effect enhances the Lymphatic drainage system in the dissolution of inflammatory mediators thereby reduces inflammation and pain.
- Fibroblast proliferation
- Endorphin secretion Key to successful Back and Neck pain Rehabilitation is in maintaining tone and strength of abdominal and spinal musculature. Advantage of Gym ball exercises over traditional exercises is that it stimulates the proprioceptive faculties and hence trains the patient in unexpected situations like slip and fall.

## END NOTE

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**Conflict of Interest:** None declared

**Cite this article as:** Sasikumar. *Newer Physical Medicine Trends in the Conservative Management of Low Back and Neck Pain*. Kerala Medical Journal. 2009 Jun 29;2(2):65-66

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