Get Educated First… Buyer Beware

DO YOU NEED AN MRI BEFORE DECOMPRESSION?

Since the mid 1990's MRI population studies have given clinicans a very real diagnostic problem. Are the disc lesions seen on MRI the cause of the present patient symptoms or are they a "normal", albeit unsettling asymptomatic artifact?

Bogduk, Twomey and many others have discovered that end-plate disruption (fracture) and degeneration are very likely sources of chronic mechanical LBP.

What is most interesting in regards asymptomatic vs. symptomatic abnormalities is their common appearance on MRI scans. Wilberger and Pang discovered that of 122 patients undergoing MRI scans for other reasons, 108 had a herniated disc. This study among others demonstrated that 70% of people who have never had back pain will have a herniated disc if an MRI were taken.

Since MRI scans can not predict when lesions that appear may in fact become painful and/or disabling) our clinical examinations, patient recommendations and safe, sensible treatment options remain key.

IS THERE A MAGIC MACHINE THAT CREATES DECOMPRESSION?

Trunk muscle response to various protocols of (IDD).

Cholewiciki J et al Manual Medicine Nov; (14) 2009.

This investigation casts determinative doubt over the essence of the concept that certain decompression machines have a magical effect vs. less expensive systems, yet here in 2020's the non-science still seems to persist among certain marketing & education groups. This forces us to ask two questions; is it ignorance or purposeful? Do those who continue to bash "more versatile and less expensive decompression machines" as fundamentally, technologically inferior to "expensive decompression machines" do so based on active, purposeful deception or based on their own ignorance of the available facts.

Initially (circa 1993) decompressions' mechanism-of-action as a technological advance was based on the (spurious) contention that paraspinal muscles "guard" against vertebral distraction when "mere traction" force is applied to the spine. Decompression manufacturers supposedly discovered how to avoid this and thus allow vertebra to separate. It was then…and continues to be provably untrue.

Cholewicki et al in the 2009 article (done through the Yale school of biomechanical research) showed there was NO difference in muscle activity when any of the oscillatory patterns, or angles-of-pull were tested. What this means shouldn't be underestimated…"*muscle activity is minimal during*

traction"...."*fluid exchange in the disc is one of the key biomechanical effects of spinal traction*" i.e. decompression. So decompression results from applied traction, NO muscle "guarding" occurs, irrespective of the claims of the manufacturer, the oscillatory pull-patterns contribute nothing nor does the angle-of-pull to the inherent fluid exchange.

NO muscle guarding, NO additional effect from IDD (oscillatory waveforms) and all forms of traction resulted in spinal disc "decompression" i.e. increased disc fluid diffusion created a limitation to trunk flexion. . Additionally the equipment is always FDA classified as mechanical traction: "decompression, that is unloading due to distraction & positioning" as well as: "traction achieves its' effects through decompression of spinal structures".

Beware of any single posture, single protocol system. The ability to amend the decompression system to the patient has become the driving factor in modern design.

To artificially limit the decompression positions to only one you necessarily limit the results you can achieve (imagine being forced to adjust in only one position).

The ability for a practitioner to understand specifically what is wrong with an individual patient and apply a specific treatment protocol is the right way to approach this and any other therapy.

MARKETING MYTHS OF DECOMPRESSION

Even many of the less hyperbolic manufacturers and their sales-forces still implicitly suggest their systems incorporate:

"*emerging technology*",

"ropes are not as good as table systems",

"*targeted Supine Decompression*",

"*muscle guarding overcome by time/force logarithm",*

"*86% or better success rates*",

"*true decompression" TM*

"supine treatments work better",

"longer treatment times work better".

Emerging Technology claims:

Nothing is really new, just remarketed. Decompression is traction to an intact disc. Simply trace the FDA clearance on any of these devices. All, to gain 510K clearance, must be substantially equivalent to the original or substantially cleared device, a Henley Tru-Trac 401 introduced to market over 40 years ago. In fact some original decompression machines cleverly hid this very plain Jane traction head inside the big impressive tower. In 1955 the journal of Rheumatology published a study on lumbar traction and the specifics of the harnessing. Cyriax. Mathews and others were early and resolute proponents of traction for disc related problems. Traction tables with axilla posts, dual-harness systems, handlebars and pelvic sections affording flexion/extension/lateral & rotational traction have been in service since the mid 1950's

***Ropes are not as good as table driven systems*:**

The highest quality legitimate medical equipment manufacturers of traction heads (worldwide) all use highly sensitive, computer controlled, transducer/clutch driven systems attached by rope to the patient pelvic harness. These systems are highly accurate and present few clinical problems or the inaccuracy inherent in trying to use a electric or hydraulic ram to separate a table with a patient laying on it, often at differing positions relative to the split in the table.

Targeted Supine Decompression:

The marketing notion of get an MRI and press the L-4 button to treat it is a farce at biomechanical face value, not to mention that this data was "gathered" in a dye fluoroscopy study which did not measure disc pressure. Mechanical traction force must travel via pelvic harness or restraint from the pelvis to the sacrum to L-5, L-4 and so on. There is little evidence that much force gets above L-3 without overstressing lower structures. "Targeting" a particular disc for is a particularly egregious aspect of Decompression marketing...especially if *angulation* of the pull is how you intend to accomplish it. IF you increase the angle of either the pull OR the patient you by necessity increase the flexion and thus the "traction" exerted at the L5/S1 disc. It cannot be diminished at that level and increased at the levels above. It is biomechanical farce and pure non-sense,

Muscle Guarding is overcome by magic logarithm of pull.

Muscle Guarding does not occur with passive decompression, Even though the science is clear, their dogged contention was, and continues to be, the *magical* (and patented) time/force logarithm of pull and the nonsense that this overcomes "muscle guarding". Even a cursory reading of Bogduk (Biomechanics of Back Pain) will dispel the notion that the body has any

mechanism that can actively resist stretch. Decompression ALWAYS occurs when you traction an intact disc no matter with a Warn winch, a come-along or with a more sophisticated traction motor. Muscle "guarding" is at once NOT intuitive, apparent or scientifically deduced with any valid or reliable indicators. Spasm/contraction of global (paraspinal) muscles would cause hyper-extension, and this NEVER happens. Local (intersegmental) muscles would hardly be capable of creating substantial forces to stop an accelerating, externally applied force. Additionally many, many researchers have attached many, many EMGs on many, many traction patients and recorded NO muscle activity (certainly none which could ever be referred to as "guarding/spasm". IF any it rarely reaches 1% MVA contrasted with up to 7% with Flexion Distraction). A case in point is Trunk muscle response to various protocols of lumbar traction (Manual Therapy 2009 Cholewicki et al). EMG and mathematical calculations were used to determine if specific attributes of an axial traction device (oscillatory applications of pull and various pull angles) could alter trunk muscle response to the traction. What the authors found was that trunk muscle activity during traction is minimal and unaffected by various pull-configurations or angles (0.65% MVA vs. 1.7% MVA in upright standing). The discs imbibe fluid (via osmosis) during traction, unimpaired by any supposed muscle action or "guarding". The proof of this is loss of trunk flexion (sit-and-reach) and overall increases in spinal length after traction (and inversion) (a phenomena only attributable to a marked increase in disc fluid content i.e. decompression). The authors' calculations suggest traction decompresses the discs to a -55mmHg. Other authors (Gay et al JMPT 2008) suggest any decompression effect is ultimately dependent on the health (degenerative status) of the disc(s). Spinal elongation occurs as a result of axial-stretch…axial stretch is not impaired by the trunk muscles. Discs decompress as a result of an applied axial tension while recumbent over time.

86% or better success rates:

What they don't tell you is that in substantial control groups the same success rate happened over a 30 visit time-frame of patients receiving sham treatments. A disc exhibiting typical chemical pain symptoms should be substantially improved by visit 6 or 2 weeks if being properly treated. If you want the patient to stay out of pain long-term then functional stabilization rehab is warranted.

True, Real, Awesome, Smart etc. Decompression ™

It's all in the name. Names like these appear in the Manufacturer's FDA Clearance (and only by virtue of this) is the trademarked name listed on the application. It doesn't mean their machine does anything different than all other substantially equivalent devices.

Supine Decompression works better

The answer, perhaps obviously is NO. The reason why such a question persists is because several manufacturers not only continue to perpetuate the notion that a supine-only traction table IS decompression (harboring some 'magic' machine attribute), but that it is also somehow technologically advanced. If we look, even in a cursory way at the available research we see a very strong case being made for prone treatment(s) and certainly a case being made that BOTH prone and supine are obviously necessary. No real, scientifically valid case can be made for limiting the therapy to just one position (Why would you limit manipulation or exercise to just one-position?).

Many years ago the term gravitational-bias was used by Mathews and others to describe the natural attribute of the nucleus in the prone position to "drift" or migrate toward the anterior (away from the distended posterior annulus). When we give a rudimentary thought to supine decompression we see a less than ideal gravitational situation. In fact it is apparent that the main premise for any efficacy to anterior-migration of the posterior hernia is via the tautness or tensioning of the PLL…any centripetal effect is minimized by the creep/migration effect. And this particular phenomenon with the PLL has yet to be specifically demonstrated (and theoretically impossible with trans-ligamentous herniation). Problematically as well is that many supine-only systems suggest 20+ minute protocols. At that length of time certainly one anticipates more natural "gravity-biased" creep/migration of the nuclear material in the "wrong" direction.

As a matter of fact the research by Fritz et al 2007 utilized the prone position exclusively.

Additionally the majority of herniated discs occur in people under the age of 45. These "classic" herniations should, by the standard of best-evidence be first *disqualified* from prone-position before defaulting to supine. In classic HNP, younger age groups do not fare well with supine positional traction. As we age herniations per se become far less common as degeneration, internal disc disruption, spondylosis and desiccation increase That's why supine position in this older age group appears to be well-tolerated and not apparently detrimental.

Gay et al in 2007 Spine discussed the fact that distraction predictably reduces nuclear disc pressure but this effect is dependent on the level of degeneration. In their study 4 out of 8 moderately degenerative discs demonstrated "decompression" however only 1 out of 7 severely degenerative discs had the same effect.

Best evidence that decompression should most often be delivered prone to be the most beneficial and in alignment with the scientific evidence is unarguable.

Longer treatment times work better

There have been few studies that have ever actually set out to compare long vs. short duration traction. Several authors such as Geoff Maitland PT and Gregory Grieves PT do conclude low force and short duration traction can viably demonstrate the benefits of the therapy but eliminate most untoward reactions. In fact they point out that such benefits with the initial "low dose" traction may suggest you refrain from subjecting the patient to any higher force or longer duration (assuming they continue to improve). And this improvement can be as simple as an increase in the straight leg raise or steady pain centralization (a key clinical sign a disc is repairing effectively). We have always taught: "if relief, don't necessarily increase (the force or time)". We have also made the suggestion too much force is the number one reason for traction reactions, followed by too much time on the table. Recently we have begun to conclude too much time may be the predominant factor in regards intolerance. This of course assumes a proper pre-classification. Not surprisingly Geoff Maitland had suggested in the 1970's "traction need not exceed 15 minutes".

References

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WHY KDT TECHNIQUE TRAINING ?

Clinical prediction rules (patient classification) decompression outcomes & table attributes

Two studies (Fritz et al; Is there a subgroup of patients likely to benefit from traction? Spine (26) 2007 & Congcong et al; A clinical CPR for classifying patients with LBP who demonstrate short-term improvement with mechanical lumbar traction. Eur Spine (18) 2009) bring into sharper focus the main tenets the KDT Technique has been fostering since its inception…patient classification is key to successful decompression outcomes. The 2009 Congcong study demonstrates outcomes were enhanced by 50% when 4 classification criteria were identified.

A complete understanding of the *technique* of decompression empowers the doctor to know which tools to pull out of the toolbox. A provocative assessment will point to a disc or disorder or both. Discs need appropriate decompression, that is the enlivening process to the disc created by the proper use of a decompression table. Decompression tables need to be sufficiently versatile to whatever mechanical posture your assessment reveals is necessary to help "decompress" a disc with respect to it's directional preference and gravitational bias. You will need to be able to pull a patient prone, supine or side lying depending on your findings.

Complete decompression practices are those who master the technique of decompression and acquire and utilize the appropriate tools of the trade. These are the practices who are consistently the most successful and generate the highest patient satisfaction and referral.

Most expensive Decompression Equipment Manufacturers offer a restricted clinical view in many cases i.e. one-position treatments, little attention to patient classification, Clinical Prediction Rule, differentiation etc.

The European Journal Spine (Jan 14. 2009) published: attention to these prediction rules could increase the likelihood of success from 44% to 79% (if 3 of the 5 predictors were present) and from 44% to 94% if 4 of the 5 were present!

Similar studies for the lumbar spine have also been recently published with the suggestion predictors also exist for this therapy as well. The variables with the lumbar spine include 2 distinct patient signs/symptoms. In the 2007 Spine study by Fritz demonstrated good short-term benefit when decompressive therapy was added to their treatment. A second trial also published in European Spine Apr 2009 showed when these predictors were found response to decompression increased from 19% to 70% success.

Here are some things you should look for if you are in the market for a decompression system:

1) Good Looks – i.e. it doesn't look like the PT's traction table
2) Amenability – works correctly in all postures, prone, supine, side-lying
3) Comfort- is actually comfortable in all postures
4) Variable treatment parameters
5) Intuitive ease of use and easy for a staff member to learn
6) Compact design that will fit easily in a treatment room
7) Technique training and Certification, not just an in-service by the salesman
8) Service, support and loaner availability
9) Complete Marketing Program that doesn't cost xtra

CERVICAL DECOMPRESSION

The most realistic & simple approach to disc compression syndromes is to utilize an occipital axial decompression device during the initial phase of care (the first few weeks) to promote intrinsic disc healing (via enhancement of nutrient exchange) and pain relief (via pre & post synaptic pain modulation from mechanoreceptors). Decompression can facilitate both. This is revealed relatively quickly in the proper patient group via improvement in range-of-motion, strength, centralization and reduction of pain intensity.

WHY DO MANAGEMENT AND MARKETING COMPANIES RECOMMEND HIGH PRICED DECOMPRESSION SYSTEMS.

When (otherwise) reputable clinicians and Practice Management Entities endorse ridiculously expensive Decompression systems which are, by all substantive scientific criteria, lacking in important aspects we assume a financial remuneration.

So in terms of clinicians selling or promoting to other clinicians should it be buyer beware, or buyer have faith? Regrettably the majority of doctor-spokespersons have in effect been paid by the highest bidder to align and exaggerate the manufacturers claims.

Such engagement is particularly telling in the Decompression industry with ads stridently suggesting traction is NOT Decompression and decrying self-anointed gurus who say otherwise. Virtually all the Decompression manufacturers have invoked a clinician to promote, and give clinical credulity to their particular unit(s). Most of us are aware of this marketing phenomena since compensating a celebrity spokes-person is common place in virtually all product lines...particularly those which command high profits.