

## Basic Thompson Information by Dr. John Minardi BHK, DC

### HISTORY

“By eliminating spinal subluxations in an organized orderly fashion, from above down and inside out, the Thompson practitioner will begin to verify the corrections he is making on the patient’s spine.”

- *J. Clay Thompson.*

Dr. Joseph Clay Thompson became involved in chiropractic after a very interesting experience. At the age of 27, Thompson developed diabetes mellitus after suffering a severe blow to the head while unloading lumber from a truck. After Thompson did not respond to traditional medical treatment, a physician gave Thompson two weeks to live. Thompson was then taken to a chiropractor, Dr. J. Delk, with the thought that there was nothing left to lose at that point. Delk adjusted Thompson for 16 consecutive days, after which Thompson no longer had any symptoms of diabetes. Interestingly, Thompson did not become involved in chiropractic at this time. He first established a career as a mechanical engineer for the American Armed Forces. It was not until ten years later, at the age of 37, that Thompson’s chiropractic studies began at Palmer College.<sup>1,2</sup>

At that time, Palmer Chiropractic College focussed on the toggle recoil adjustment, which emphasized that the harder/bigger the recoil...the better the adjustment. However, when Thompson delivered an adjustment, he felt his body pushing away from his patient, and felt as though this was a shock to both himself and his patient. Having such an in-depth knowledge of mechanics, Thompson knew that there must be a better way to deliver a high velocity thrust, with less amplitude.<sup>1,2</sup> Ironically, when Thompson first began practising, he purchased an old table with a loose screw-jack that was used to elevate the headpiece. Because of this, the headpiece gave way when the patient was adjusted. When Thompson bought a new table, his patients complained, and he was not achieving the same results as he had with the old table. Around this same time, Thompson observed a doctor adjust an infant in a way that would impact the rest of his chiropractic career. The doctor would lay the baby on the mother’s lap in a side posture position. When he was ready to deliver the adjustment, he asked the parent to raise her heel off the floor. As the doctor delivered the adjustment to the infant, the mother’s heel dropped back to the floor.<sup>1</sup>

With these two observations, combined with Thompson’s vast experience in engineering, Clay realized that chiropractors could deliver an adjustment with less force if they utilized Newton’s first law of motion. In 1952, Clay invented the first drop head piece. B.J. Palmer was so keenly interested in this innovation, that after its unveiling at the Palmer homecoming in 1952, he asked to be adjusted, and stated that the drop-piece would revolutionize chiropractic.<sup>1,2</sup> Dr. W.H. Quigley, B.J. Palmer’s nephew, took the head-piece to the Clearview Sanitarium and used it in his work with mentally deficient patients, achieving remarkable results. Thompson went on to construct the first drop-piece table incorporating cervical, dorsal, lumbar and pelvic drop-pieces in 1957.

It is without question that the drop table is central to Thompson’s technological innovations. However, equally as important is the establishment of the leg check procedure, which is central to the analytical perspective of the technique. Thompson credits Dr. Romer Derefield of Michigan with much of the initial research collected with the leg length analysis. Credit was also given to Dr. Alvin Niblo for adding a major pelvic dysfunction associated with the leg length inequality. Thompson later added to this information by including further cervical, pelvic, lumbar and thoracic subluxations. By chance, Thompson discovered that leg lengths could change with rotation of the head. Further examination revealed a tender nodule along the lamina pedicle junction, and that thrusting through the tender nodule would ameliorate prone leg length inequalities. It is from this point that Thompson began to understand and incorporate other areas of the spine, as they too had an effect on leg lengths.

## **Philosophical Perspectives**

A belief in the innate ability of the body to maintain homeostasis and signal the presence of organic disturbances by structural adaptation provide the basis for Thompson Technique. Clay was a firm believer and advocate of the above down inside out (A.D.I.O.) principal, and promoted the principles of allowing the body's innate intelligence to heal itself through the correction of vertebral subluxations. He was, as his technique espoused, a strong proponent of the use of drop table assisted adjusting for the correction of vertebral subluxations. These subluxations were detected using leg length analysis, x-ray, palpation and instrumentation.<sup>3</sup>

The Thompson philosophy also includes Newton's first law which states that "a body is in equilibrium if no force is acting upon it. If at rest it remains so, if in action it persists in motion, unless an opposing motion is met". Utilizing drop pieces, the thrust imparts motion to the vertebral segment, which remains in motion until the conclusion of the drop, at which time all other segments in contact with the drop piece cease, with the subluxated segment continuing to move into its corrective position. This is precisely why the technique is called Thompson Terminal Point Technique, because the correction is made at the terminal point at which the drop piece stops.

Critical to Thompson philosophy is the concept of prioritising the spine into primary, secondary and tertiary areas of subluxations. Primary subluxations are corrected first, followed by secondary and then tertiary areas of subluxations. The primary areas of the spine are the cervical and pelvic areas, secondary are the C-T junction and lumbar spine, and tertiary area is the remainder of the t-spine. Hence, Thompson is a full spine chiropractic approach to health care. This concept is key and meshes with the leg check analysis, as one area is adjusted, then the legs are rechecked to see if a balance is achieved. If there is balance, then no further adjustments are performed, if balance is not achieved then the chiropractor moves to the next area of subluxation. This is done so that the chiropractor only adjusts the major subluxations, and not simply every restriction that is noted. A final note on philosophy is that of sparing the chiropractor from physical degeneration due to difficult manual manoeuvres. Thompson technique was, and continues to be, a career sparing technique.<sup>1,3</sup>

## **Terminal Point in Adjusting**

As mentioned earlier, terminal point refers to the table's drop piece which corrects vertebral subluxations at the terminal or end-point of its travel distance. The use of the terminal point enables the chiropractor to provide an alternative to forceful or leverage type adjusting techniques. Thompson has had a long relationship with the Williams Manufacturing company, who have built and continually upgrade the Zenith series of Pneumatic drop tables. Thompson has become synonymous with this Cadillac of adjusting tables due to the superiority of the pneumatic drops to all other types. However, this table is not required to utilize the leg check analysis. Furthermore, any good quality drop table can be utilized for this technique. With the Zenith drop table, each point is weighted by the doctor using tension control regulating air flow to the appropriate mechanism. There are four distinct drop sections, including cervical, dorsal, lumbar and pelvis, with the ability of having adjacent sections act in unison with one another. This creates a more gentle technique that benefits not only acute patients but also the elderly and children.<sup>3</sup>

## **Analytical Procedures**

There are four main analytical procedures in Thompson Technique: palpation, x-ray analysis, instrumentation and leg check analysis. First, the Thompson practitioner must have excellent palpation skills to assist in the detection of subluxations. With respect to x-ray, Thompson agreed with Dr. Russ Erhart in that x-rays are used to tell the doctor what not to adjust, as much as what to adjust. Although Clay x-rayed many of his patients, he did not rely heavily on x-ray analysis. Clay felt that an x-ray catches structures one moment in time, but does not indicate the

segment's function. Thompson believed that it was more important to have a balanced spine than a straight one. Hence, the leg check always takes precedence over the x-ray for detecting subluxations in this technique. X-rays are used primarily as aids in distinguishing the type of subluxation involved, to rule out pathology and to assist the doctor's leg check analysis. Instrumentation was an important part of Thompson practice. Initially, Clay used a neurocalometer (NCM) until the development of the derm therm-o-gram (DTG). Instrumentation was used because it provided an indicator of autonomic function in the body, and can determine neurophysiological dysfunction. Again, instrumentation was used as another tool to determine the location of the subluxation.

Finally, the leg check analysis is used to detect neurophysiological dysfunction through spastic muscular contractions. There are main subluxation categories associated with the leg check analysis, from which several different sub-categories exist. Furthermore, several other components incorporating rare and obscure subluxations are assessed by the leg check. There are basically two scenarios that will be present when performing a leg check. Following the initial examination, the prone leg length analysis will reveal either even legs, or a contracted leg in the extended position. Depending on what clinical signs and symptoms the patient displays, will influence what the leg length analysis determines.

### **Technique Influences**

Thompson lived during a time with many of the pioneers of chiropractic. Clay would regularly discuss patients, protocol and new ideas with the likes of B.J. Palmer, Clarence Gonstead and Major DeJarnette. Thus, it is obvious to those who observe or practise Thompson, that the technique incorporates some of the ideas of these great leaders.

### **Contra-indications to Care**

As in all manual adjustive therapy, any contra-indications must be observed. It is important to note that Thompson is considered a less ballistic approach to adjustive therapy, especially if the patient is properly weighed on the table. However, the force can still be aggravating to an acute disc, spondylolisthesis greater than Grade 3 or an aortic aneurysm.<sup>2</sup> As in all chiropractic procedures, if any contra-indications to care are present, no adjustment would be provided to the affected area.

## Reliability and Validity of Leg Length Analysis

For years, many individuals questioned the reliability and validity of the Thompson technique because of its use of the leg length analysis. Many critics have claimed that there is no scientific literature supporting the reliability and validity of the leg length analysis, and thus should not be performed. These comments are simply incorrect, and stated by individuals who obviously never completed a proper literature search regarding leg length inequalities (LLI). Pioneer research on LLI, and the reliability of their utilization as a clinical tool began in the late 70's and early 80's. In that time period, researchers concluded that the gold standard for LLI was by using x-ray.<sup>9</sup> Further research then focussed on prone and supine visual LLI observations, as researchers in the 1980's indicated that visual methods of measurement did not differ significantly from the x-ray method of measuring LLI. In fact, when compared, the literature demonstrated that there is a strong relationship between visual and x-rays methods of measurements.<sup>10</sup> In 1988, more detailed research of the Thompson leg check was performed and demonstrated that the clinicians studied could reliably measure a LLI to less than 3mm, with both intra and inter-examiner reliability.<sup>11</sup> DeBeor (12) also found good agreement, as well as significant interclass correlation between the examiners studied. More recent literature by Rhodes et al (13) indicated that the intraexaminer reliability was excellent for the prone leg check, and that prone measurements were highly correlated with x-ray measurements. In the only study done that observed the validity of LLI, the researchers found that when comparing prone leg lengths to x-ray measurements, 54% of the prone measurements were within 3mm of the x-ray measurement, showing a strong correlation (.71).<sup>14</sup> However, the same study demonstrated that in 12% of the subjects tested, the opposite legs were viewed as being shorter. Thus the research concluded that despite the strong correlation between x-ray and prone measurements of LLI, more research was needed.<sup>14</sup> One should keep in mind, however, that even though x-ray is seen as the gold standard, it is usually taken weight bearing, and prone measurements are viewed non-weight bearing, which may account for some of these millimetre discrepancies. More recent literature continues to indicate good reproducibility to detect LLI using either prone or supine protocols,<sup>15,16</sup> and are also beginning to use LLI for the detection of other dysfunctions. For example, Brink (17) found a statistically significant association between LLI and the side of radiating pain in patients with lumbar disc herniations. Thus, LLI may be used as an inexpensive and quick tool for evaluating these types of disorders, but more literature and clinical experience is needed.

I've only touched the surface of the literature that is available for using LLI as a clinical tool. Thus, most individuals should read the literature on LLI further before making blanket statements regarding unreliability or invalidity. We should remember that all diagnostic, orthopaedic and palpatory assessments have been criticised and in some cases disproved in the literature, however, none of these have been discarded. LLI as any other assessment tool has its limitations, but we should incorporate as many tools as possible when assessing a patient to ensure that we are correcting the primary problem.

In closing, Dr. Thompson was a major pioneer in the field of chiropractic, introducing new ideas, concepts and adjustive procedures. He was an avid researcher who headed the Palmer Research Institution for 10 years, and his technique has weathered over 50 years of professional scrutiny. Thompson not only wanted a technique that was comfortable and patient friendly, he wanted to lengthen the life of the chiropractors career, "adding 15 years of solid productivity".<sup>1,2</sup>

## Proper Leg Check Procedure

The leg check has mistakenly been interpreted as a simple procedure. In fact, an accurate leg check analysis is one of the most difficult aspects of the Thompson analysis. Quite simply, if the leg analysis is inaccurate, the entire Thompson procedure will be compromised. Therefore, to ensure accuracy and consistency in the leg length analysis, the following must be performed:

1) Once the patient has been placed on the table, make sure he/she is comfortable and does not shift. Lower the table to its horizontal position.

If not working on a Thompson 440, Have the person step from the back of the table, Kneeling down into the proper prone position. When in the prone position, briefly lift the patient's hips and legs off of the table to decrease any distortion of musculature.

2) If working on a Thompson 440 table, Raise the footrest so that the patient's toes do not touch the footplate. This is necessary, because if the patient's toes touch the footplate, it will result in excessive dorsi-flexion, which will increase the tension in the musculature of the legs, and decrease the accuracy of the leg check.

3) Place the hands around the ankles so that the index and middle fingers separate around the lateral malleoli, and the thumb rests under the calcaneus. This is referred to as the "Guns Position". If the doctor has incredibly small hands, an acceptable alternative is to grasp the foot so that the palmar surface of all index finger are on the dorsum of the patient's foot, while the thumb rests under the calcaneus. Whichever is chosen, it is imperative that the doctor perform it the exact same way each time, as it will increase the accuracy and reliability of the leg check.

4) Be sure that the thumb applies no excessive cephalad pressure. Apply only enough cephalad pressure to have the patient's shoe touch the plantar surface of their foot. Excessive pressure will make the leg check inaccurate, and will make assessing the subtle changes in the leg length very difficult.

5) Raise the feet 3-4 inches off of the footrest. This is important to decrease any friction between the table and the patient's legs. Do not leave them on the table, it does make a difference!

6) Remove any dorsi or plantar flexion, as well as inversion or eversion that may be present in the feet. However, any foot flare (toeing in or out) can remain present, as it will provide clues for pelvic subluxations discussed later on.

7) Bring the feet closer together, leaving approximately one half inch space from each other. Without touching the feet together, look where the upper meets the sole of the shoe. It is important to use this area of the shoe for our sight marking, as this area will be the same bilaterally. The doctor should not use the bottom of the shoe for sight markings, as different wear patterns on the sole of the shoe will cause inaccuracies.

8) To ensure the accuracy of our leg length analysis, line up the space between the shoes with centre of the spine. Accomplish this by sighting that space through the gluteal crease, continuing through the spinous processes and ending at the external occipital protuberance (EOP).

9) Make a mental note of which leg is contracted (short) if any.

10) Keeping the hands in the same position, bring the legs to 90 degrees flexion. Again, sight down the welt of the shoe through the gluteal crease, continuing through the spinous processes and ending at the EOP, making a note of the position of the previously contracted leg.

## **Prioritization of the Spine**

As mentioned previously, Thompson is a full spine chiropractic approach to detecting and correcting subluxations. Critical to Thompson philosophy is the concept of prioritising the spine into primary, secondary and tertiary areas of subluxations. Primary subluxations are corrected first, followed by secondary and then tertiary areas of subluxations. Thompson's game plan is to adjust the highest and lowest subluxations first, and working its way to the centre of the spine only if necessary. The primary areas of the spine are the cervical and pelvic areas, secondary are the C-T junction and lumbar spine, and tertiary area is the remainder of the thoracic spine. (See Figure 2) This concept is key and meshes with the leg check analysis, as one area is adjusted, then the legs are rechecked to see if a balance is achieved. If there is balance, then no further adjustments are performed, if balance is not achieved then the chiropractor moves to the next area of subluxation. This concept of checking, correcting and rechecking is termed "Chasing the Derefield" and is done so that the chiropractor only adjusts the major subluxations, and not simply every restriction that is noted.

## **Using the Drop Piece Mechanism to Assist the Adjustment**

As mentioned previously in the philosophy of Thompson, drop pieces are utilized to incorporate Newton's First Law of Physics - The Law of Inertia. Newton's First Law basically states that a body in motion will stay in motion unless acted upon by an equal and opposite force. When at rest, it remains at rest, when in motion it remains in motion. When the doctor positions a patient correctly using a drop piece, a combination of the doctors thrust, and the falling of the drop piece sets the subluxated vertebrae in motion. When the drop hits its terminal point, the vertebrae will continue to fall, using the Law of Inertia, until it sets into its neutral position. Furthermore, the doctor can decrease the amplitude of thrust, as the drop piece mechanism increases the velocity of the adjustment, resulting in a less jarring and more comfortable adjustment for the patient. The use of the drop piece will also provide less physical stress to the doctor, thereby increasing a doctor's career considerably.

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