
Specific application of movement and positioning technique to the lumbar spine, considering theoretical formulation and therapeutic application

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The purpose of this essay is to explore the manner in which we conceive of the problem and the solutions to low back and lower extremity pain in the arena of conservative therapy. An attempt will be made in particular to explore the reasons for the predominance of and the arguments forwarded to support flexion therapy. Contradictions that lie within these beliefs will be presented as well as alternate interpretations of the clinical phenomena mandating adequate explanation. In contrast to the universal application of flexion therapy, the reasons for the potential efficacy of other movements, in particular extension, will be explored. Finally, the potential advantages of a system developed by Robin McKenzie that exploits the therapeutic potential of all movement directions will be outlined. Coming to bear on these issues are philosophical and ethical concerns. In addition, the specific movement therapy of manipulation will be considered in light of these elucidations.

The thrust of the reasoning forwarded below is that the predominance of the flexion concept has been permitted (all other reasons aside) by the failure to adequately explore the relationship between the behavior of the patient's pain and the movement and positioning of the patient's lumbar spine. In other words, treatment has traditionally been predicated on how or what the practitioner feels, not what the patient feels!

The concern of science is to explain phenomena. The concern of the human health sciences is to explain phenomena (diagnosis) and to apply therapeutic techniques, the explanation of which are hopefully somewhat consistent with the concepts used to diagnose.

The manipulative schools of treatment are historically rooted in a philosophical basis that considered the body's innate potential to heal itself, given the opportunity. The innate vital force, when uninhibited, promotes optimum function. Manipulative schools of thought such as chiropractic and osteopathy are historically rooted in an attitude that encouraged drugless and non-surgical methods first in an attempt to give the innate

force a chance. Unfortunately, the tradition has been that the practitioner by his analysis and technique is the only one that has the skills to guide this vital force and that patients must rely on the practitioner instead of being taught themselves how to permit the expression of a healing process without the aid of a professional.

In other words, these manipulative therapies traditionally have predicated treatment upon the practitioner's appreciation of the patient's "situation." The relationship of the patient's pain behavior to movement and positioning is never fully assessed. Manipulative therapy traditionally has predicated treatment upon the position of vertebrae in relationship to each other as revealed by skeletal radiology and/or palpation findings. These findings were considered in light of theories describing displaced vertebrae resulting in pinched nerves or otherwise compromised intervertebral foramina. The remedy was to move those bones back to their proper relationship ("putting them back in place") so the nerve root would not be "pinched" and the body could then be returned to its self-regulating, innate, vital mechanism.

Modern practice often involves motion palpation, whereupon joint motion (as opposed to a static x-ray) can be evaluated at different intervertebral levels and the information gathered directs manipulative techniques. This attempts to go beyond the static radiograph to assess function in the moving joint, although it should be noted that it is the practitioner introducing the movement and does not involve the voluntary movement of the patient. Other information derived from palpation findings, such as asymmetry, myofascial changes, temperature differences, etc., may also affect the therapeutic choices made.

The above describes some of the ways treatment can be predicated by how the practitioner feels (that is, the visual and intellectual analysis), as well as predicating treatment by what the practitioner feels (the palpation and intellectual analysis). Most readers are well aware of even more esoteric techniques, having less to do with the common experiences of everyday life and even more abstracted from the movement and positioning of the patient's body parts.

These methods are limited in a significant aspect

because they do not specifically and critically evaluate the relationship between movement, positioning, and the behavior of the patient's pain. The resulting danger is that intrinsic, innate, and vital biological mechanisms are analyzed to the point that loses sight of what the phenomena we are trying to appreciate really is (reductionism). Consider that the patient presents with pain complaints related to movement and positioning. This is the "in vivo" condition at hand that we reduce to an "in vitro" situation by our analytic methods. Methods, from the perspective of the patient, that are at best utilizing passive means of assessment.

A careful appreciation of the patient's pain behavior to their movement and positioning would help us forge examination and treatment procedures that are reasonable and consistent with clinical phenomena demanding explanation. This more often than not is never accomplished. Combined with the predilection for universal flexion therapy, this goal becomes even more remote.

Consider the patient presenting with low back and/or lower extremity pain who, of course, has pain complaints related to movement and positioning of his lumbar spine. Examination involves range of motion studies that document motion restriction and the accompanying pain. The practitioner may treat with methods that introduce movement or maintain certain positioning while the treatment is delivered. In addition, advice may be given regarding movement and positioning outside the clinical therapeutic setting. Movement and positioning appear to be intrinsic to the presenting complaint, examination, therapy delivered, and how the patient cares for themselves upon the advice of the practitioner. Nonetheless, the information recorded by the clinician regarding the relationship between the behavior of the patient's pain to the movement and positioning of the patient's lumbar spine is something that is often recorded upon examination for medical/legal purposes only and summarily forgotten for therapeutic purposes. In fact, it will be argued that the information available in the clinical setting is often "distorted" by the clinician due to preconceived notions about the ultimate efficacy of flexion treatment principles. That is, the belief in flexion as the universal therapeutic modality distorts the clinician's perception of presenting complaints in order to make them consistent with the one therapeutic approach that the clinician adheres to.

For therapeutic purposes, many practitioners will universally apply flexion principles although the lumbar spine is capable of extension, lateral flexion, and rotation as well. Patients are advised to promote flexion and admonished to avoid extension. The conceptual adherence to universal flexion therapy is so strong that it distorts the practitioner's perception of clinical phenomena, blinding the practitioner to other potential therapeutic motion and positions.

Take as an example, a patient who presents with

severe low back pain. This patient has lost the lordotic curve and presents with kyphosis of the lumbar spine (flexion). The patient relates that when bending down to pick up the morning newspaper (flexion), pain was experienced along with the inability to straighten up (flexion). The patient reports having slept in the fetal position (flexion) and that during the week his job entails sitting all day, slouched over the papers spread across his desk (flexion). The patient is examined during which the straight-leg raise is performed (flexing the low back) to evoke the lesion. After all this, treatment is commenced with flexion whether it be Williams' exercises, knees up on pillows, Cox technique, etc.

It may seem odd that flexion would be prescribed as a treatment after the scenario as described above. The reason for this is that the belief in flexion as a therapeutic avenue is so strong that it blinds us, as in this case history just described, to the salient features of flexion as the precipitating cause itself, and is one of the goals of this essay to explore the reasons as to why this may have occurred.

The distortion of the practitioner's perception of the clinical phenomena, as mentioned above, can be great. Learned individuals such as Hoppenfeld himself states "It is not uncommon to find the normal lumbar lordosis entirely absent (paravertebral muscle spasm)"¹ On the contrary, Cyriax's thinking is a bit clearer in this regard when he states "Attribution of lumbago to erector muscle spasm is remarkable in view of the patient's flexed posture. The posture of lumbago indicates the sacrospinalis muscles cannot be in spasm as the patient is fixed in flexion not extension, however, the muscles do contract normally to prevent the patient from toppling further forwards." Kendall² et al state "Bilateral weakness of the back extensor muscles results in a lumbar kyphosis" as well as "bilateral contracture of the low back muscles results in a lordosis."³

Hoppenfeld's thinking then in this regard appears to be very odd. The most pronounced medical condition of low back muscle spasm is that of opisthotonos and certainly lumbar kyphosis is far from that! Next, then, I wish to consider more broadly some of the reasons that may contribute to the end results being such perceptions as expressed by Hoppenfeld.

Flexion has emerged as a therapeutic tool that is universally applied by some for low back pain, and some of the reasons may be those listed below as follows:

1. **Pain avoidance.** Patients with acute low back pain may initially seek to avoid pain by keeping their low back in a flexed, flattened, kyphotic position. Even those with chronic low backs maybe momentarily more comfortable this way. Nonetheless, the acute low back is a more striking example, and these antalgic, kyphotic individuals may find some "relief" by remaining in flexed movements or position even though such flexion may have precipitated their pain.

This "relief" is often pain avoidance more than pain relief as the patient's level of pain does not significantly continue to decrease with increased function nor is full range of motion significantly reintroduced by flexed movements or positions. The underlying thought here seems to be that the antalgia is "good" and that the body is using the antalgia to avoid or "cure" since the antalgia is "away" from the back. It seems to be assumed that it is the structures in the back (presumably the muscles or facet joints) from which the body is trying to "escape". These muscles or facets then must be the culprit and the source of pain. Spasm is assumed to exist in the musculature (as in the Hoppenfeld quote above), and treatment is then directed to reduce extension which recruits these muscles and approximates the posterior facets. The source of the pain is assumed to be from the superficial back structures, and the antalgic distortion is assumed to be therapeutically beneficial instead of intrinsically the pathology itself!

2. Pathological cases. Concerning severe and significant pathologic cases such as total compromise of intervertebral discs, cerebral vascular accidents, and polio, it may be seen how the clinical findings in these cases of severe pathology have been generalized to indicate extension as unwarranted and dangerous for all spinal conditions. In other words, pathological models have been substituted as models for normal physiological considerations.

a. In severe posterior disc herniations with complete annular rupture, extension is virtually impossible and truly prohibited. Unfortunately, this has been taken as the model for less severe conditions.

b. Many of the treatments for low back conditions find their origin in the first half of the century when polio was a common condition in the industrialized nations. Spinal forms affected muscles supplied by motor neurons in the spinal cord, and such treatments as those described by Ober⁴ for contracture of the iliotibial band were directed at reducing the resulting hyperlordosis by strengthening abdominal and gluteal musculature. Unfortunately, this was generalized to the rest of the population as reflected in Ober's therapeutic recommendations as well as those in the Williams' exercises which also originated early in this century

c. Cerebrovascular accidents. These incidences involving extension and rotation movements of the cervical spine have understandably prejudiced the manipulative community against extension movement in all areas of the spine.

3. Orthopedic tests. Individuals who refuse to contemplate extension as a potential therapeutic modality besides drawing on some of the examples as cited above will, in addition, often cite orthopedic tests such as Kemp's test where the lower spine is put in a

combined position of rotation, lateral bending, and extension. The test is positive when low back pain radiates into the lower extremity. This is then taken as a universal sign that extension is prohibited when, in fact, it just indicates that extension, lateral bending, and rotation combined is prohibited in that particular patient. It should also not be forgotten that straight-leg raising which flexes the lumbar spine may also provoke lower extremity pain, and in such a case flexion of the lumbar spine would similarly be prohibited. Lastly, it should be noted that the sitting root test which may also evoke low back and leg pain is considered positive when the patient attempts to extend the lumbar spine while sitting, in an attempt to relieve the low back and lower extremity pain. In this latter case, the argument would point towards the fact that extension may be advantageous to the particular individual behaving in that manner, as it tends to reduce the radiation of pain to the lower extremity

4. **Therapeutic possibilities.** Since it is easy for us to touch close posterior joint structures as well as lumbar muscles, we assume that pain must be from these structures and that treatment to these structures would benefit the individual. Further assumption is made that the low back muscles must be stretched and that the posterior joint structures should be separated in order to achieve these goals. In addition to Cyriax's comments as described above, it should be noted that recent research indicates low back pain to be associated with more marked weakness of back extensors than abdominal musculature⁵, and that increasing intra-abdominal pressure (associated with tightening abdominal musculature) is associated with an increasing load on the lumbar spine and not vice versa.⁶

5. **Crash/fetal position.** Everyone who has used commercial airlines is instructed in the "crash" position which is essentially a flexed/fetal posture. This position, which is appropriate to protect the body when hurling through space, has been generalized to notions regarding therapeutic application. In addition, in this post-Freudian age, we may conceptualize intrauterine life as safe, pleasant, and idyllic. Ergo, there must be something intrinsically beneficial for adult human beings to assume the fetal posture!

6. **The old grey mare.** Hyperlordotic posture of aged animals, the horse, for example, may make us think of extension/lordosis as damaging because it is associated with the decrepitude of old age in the barnyard!

7. **Abdominal strengthening.** Strengthening abdominal, hip extensor, and hamstring musculature reduces lumbar lordosis, while strengthening low back and hip flexor musculature, increases lumbar lordosis. The paradoxical view that the patient presenting with flexed, kyphotic, lumbago postures suffers from

extensor spasm promotes the concept that erector muscles need stretching while abdominal muscles need strengthening. The evidence of recent research flying in the face of this has just been mentioned. Also previously mentioned is the historical context of early orthopedic work with polio victims suffering from hyperlordosis in part due to contracture of hip flexors (hence, Ober's test). Treatment was aimed at releasing the contracture of the hip flexors and promoting the strengthening of the musculature that reduces lumbar lordosis. Unfortunately, the success of one mode treatment for a specific pathological group was generalized to all cases and considered the *way* to promote normal physiology.

Another factor that may have erroneously led to the overemphasis of lumbar strengthening is the fact that in slouching and lumbago posture, the abdominal wall may protrude. This is caused by approximation of the origin and exertion of the rectus abdominis creating slack in the muscle. Regaining normal posture, via the recruitment of back extensors and the assumption of normal lordosis, takes the slack out of the rectus abdominis without strengthening the structure. So it is the resulting appearance of a non-slackened abdominal, as associated with normal posture, that may have been confused as a mandate to strengthen this structure to achieve the same goal. Proponents of flexion therapy may point to pregnant women or men with "beer bellies." These individuals have hyperlordosis and benefit from decreasing the degree of lordosis. This is best done by losing the weight, not by regaining abdominal wall strength, which these patients may very well possess in addition to their respective burdens.

8. **Biomechanics.** Generally, flexion is thought of as beneficial because it separates posterior joint elements and opens the intervertebral foramen. Among the manipulative therapists, our palpation skills may cause us to overemphasize posterior joint elements, some of which we can feel. These considerations have helped to promote the tradition in manipulative circles of utilizing flexion as a therapeutic modality with admonitions against extension. Many therapists advance the concept that lordosis/extension is bad for the low back. James Cox advances the concept that it is bad because it promotes posterior disc protrusion as well as facet joint damage (presumably through approximation). His therapeutic procedures are dictated by these concepts even though lordosis is the normal anatomical situation of the lumbar spine. As a result, he advocates universal application of flex-ion initially as the most advantageous for lumbosacral disorders. He states that "Even though the force propelling the disc posteriorly is increased by flexion, the tightening of the posterior annulus and the posterior longitudinal ligament in flexion improves the barrier to a greater extent with the net effect being reduction of the posterior protrusion."⁷

To use Cyriax's word, this does seem "remarkable" inasmuch as it seems hard to believe that the noncontractile structures of the annulus and posterior longitudinal ligament have the ability to counter and overcome the forces exerted through the vertebral body by the weight bearing down from above. During flex-ion, this would appear to cause migration of the intervertebral disc material in a net posterior direction away from the anterior aspect of the disc through which the forces of the body's weight is being transmitted.

Above, then, are some of the reasons and beliefs that have caused flexion therapy to have gained favor. Some of the contradictions and problems of these viewpoints have been considered. It is interesting to note that even in the practices of those advocating flexion, that extension advice and therapy is unwittingly utilized. Below, some of the ways extension is so advised by promoters of flexion therapy will be considered:

1. **Postural advice to patients.** Patients are educated that the normal curves of the lumbar and cervical spine are lordotic and that the thoracic and sacral curves are kyphotic. Proper posture involves maintaining lumbar lordosis while sitting, standing, and lifting (i.e. do not flex). Patients who are acute are instructed that sitting is deleterious, especially when sitting slouched (increased flexion). Nachemson's work demonstrated increased intradiscal pressure with increased slouching in the sitting posture (increased flexion).⁸
2. **Orthopedic supports.** The finest ergonomic seating promotes the maintenance of the normal lordotic curve. The most ardent flexion therapist would be unlikely to advise otherwise, although the reader may be surprised to note this is not unknown.⁹ Bracing the low back with corsets or supports also diminishes the ability to flex and may promote a semblance of normal lordotic posture.
3. **Therapy and techniques.** Many therapeutic approaches also promote the increase of extension and diminution of flexion, although this may not be readily realized. Some of these are as follows:
 - a. *Antigravity therapy.* This is one sure way to reduce flexion, and the extension component of antigravity therapy may be more efficacious than the reversal of gravity forces itself. Consider early morning back pain and the increased back pain of astronauts.
 - b. *Manipulative therapy.* Consider the breakaway and drop tables utilizing posterior to anterior thrusts. Many manipulative techniques have an extension component no matter how careful we are to set up for what we think will be flexion movement.
 - c. *Yoga therapy.* Utilizes many extension postures.

- d. *Sacro-occipital technique*. This technique utilizes the placement of wedges below the greater trochanter in the prone position for what is called category III (the sciatic patient). Placement of wedges in this position in combination with a roll under the sternum promotes lumbar lordosis (extension).
- e. *Deep tissue massage*. Paraspinal deep tissue massage introduces a vector of force that extends the motor unit at the level being treated.
- f. *The Spinolator™ table*. The supine patient has rollers traversing up and down paraspinally, exerting an extension effect on the spine.
- g. *Cox flexion-distraction*. Even James Cox's flexion-distraction technique maybe promoting extension of the motor unit. While the caudal section of the treatment table is being lowered in order to flex the prone patient, the heel of the practitioner's hand is exerting a posterior to anterior as well as an inferior to superior force on the spinous processes so contacted! "One third of the doctor's weight is placed upon the spinous process, and the other two thirds is distributed toward the patient's head."¹⁰ In effect, the motor unit contacted is unwittingly being extended!

Above, then, are listed some of the ways in which clinical extension therapy is being promoted even though conceptually there may be an adherence to flex-ion therapy as the most advantageous, and extension may be considered as deleterious. It should be clear by now to the reader that there are further contradictions here and that the blind adherence to the flexion philosophy may obscure empirical clinical vision. The question arises then as to when are therapeutic movements and positioning in flexion appropriate, when is extension appropriate, when are other motions appropriate, and, most importantly, when are all movements permissible and appropriate.

An even greater question arises in these regards as to the importance of involving patients in the responsibility and management of their own spinal problem. The ultimate ethical question is that if movement and positioning can be adequately assessed in relationship to the behavior of the patient's pain, should we not try first to have the patient conduct this movement and positioning themselves, both for diagnostic and treatment purposes?

In order to achieve these goals, there must be some consistency in explaining phenomena. Theoretical formulations of physiology, pathology, and therapeutics should adhere to the same underlying principles. This permits the therapeutic method to satisfy the therapist's desire to be "specific." This specificity historically applied to 2 or 3 vertebrae that were out of relationship to each other and, once discovered, could be specifically corrected. As previously mentioned, this may have been analyzed by x-ray or motion palpation, searching for asymmetry in positioning or movement. The danger

in seeking specificity this way has been one of reducing the phenomena below the level of which it is intelligible. That is, the relationship of the patient's movement to the behavior of the patient's pain before, during, and after such movement should be assessed so that it is an integral part of both diagnosis and treatment.

The danger of manipulative therapy regarding diagnosis and treatment is very similar to the criticisms that have been levied by nonallopathic physicians against traditional Western pharmacological medical therapy. Specific diagnoses arrived at by our assessments (that is, how WE feel about the patient's condition) are in danger of being too abstracted or tangential to the patient's problem. We may lose sight of how the patient feels in relationship to movement and positioning. In so doing, it is almost as if we are searching for the secret unbeknownst to the patient and not demonstrable or controllable by the patient. We intellectually appraise asymmetry or other dysfunctions on x-ray or examination, assigning various values to these findings. We palpate joints or soft tissue structures and deduce what the patient needs from us in the way of treatment in some manner. The patient remains a passive participant to the administration of wiser individuals.

The use of specific movement and positioning therapy techniques, whether performed by the therapist or the patient themselves, are best when specifically and consistently applied in both diagnosis and treatment. It should best resemble movement that the patient performs in everyday life rather than movements that the practitioner puts the patient through passively in order to both diagnosis and treat (for example, joint play/motion palpation). A system is needed that specifically tells us what movement and positions are therapeutically correct to indulge in, which movements and positions are therapeutically correct to avoid, and when prohibitive movements can be reintroduced. In addition, out of respect for the human organism, we need to identify who requires manipulation by the clinician and who is able to liberate themselves from situations impeding the proper expression of innate vital forces without the aid of another. Out of respect for the "innate", we should promote the use of simple methods of movement and positioning self care, prior to any therapy or manipulations we apply. If this method proves successful, the patient need not go on to become dependent on the therapeutic procedures dispensed by the professional. Almost as a corollary to Hippocrates' "First do no harm," we may say, "First do no therapeutic action that the patient can first attempt for themselves." We do the patient harm by not helping them realize the healing forces within. The confusion within the manipulative schools regarding the innate vital forces is almost as if it is thought that we are born with the heel of the practitioner's hand in contact with our vertebrae. The ultimate of the "straight chiropractor" would be the one that attempts to let the biological processes take care of and correct themselves before any force is intro-

duced from without, which is one step beyond the "straight" who relies on manual manipulation only while shunning ancillary methods.

Robin McKenzie's system appears to do best in an attempt to clear up the conceptual muddle as described above by providing a systematic and consistent empirical method for diagnosis and treatment; as well as satisfying the ethical criteria described above. In addition, he provides some theoretical formulations regarding the biomechanics of the disc contrary to Cox. Whether these theoretical formulations are correct or not, really doesn't matter . . . the methodic simplicity and efficacy of Robin McKenzie's system is so overwhelming that any theory now or in the future will have to fit the empirical facts of his method. His method, by accounting for the behaviour of the patient's pain in relationship to movement and positioning is literally a Copernican revolution in orthopedics.

Prior to Copernicus, when the earth was considered the center of the solar system, the movements of the planets had to be described in a very tortuous and complicated manner. When Copernicus postulated that the sun was the center of the solar system, the movements of the planets were able to be described in a much more consistent and simplistic manner and with a much greater economy of effort. Such is the case with the McKenzie system which has enabled us to both organize and act upon the clinical phenomena presenting to us regarding low back and lower extremity pain.

The greatest misconception about Robin McKenzie's work is that it is an exclusive extension therapy. In fact, he more often than not is referred to in the context of "McKenzie extensions." Nothing could be farther from the truth. Unlike Cox, all movements of the lumbar spine are initially therapeutic possibilities to McKenzie; and unlike Cox, he adequately addresses the relationship of the behaviour of the patient's low back and lower extremity pain to the patient's movement and positioning to "specifically" treat.

His theoretical biomechanical viewpoint is in direct opposition to that of Cox. He states, "It seems that ... anterior bulging of the disc while in flexion and posterior bulging in extension is merely caused by a slack of the relaxed annulus. The bulge is under reduced tangential stress, and the nucleus has moved away from the bulge."¹¹

Again, in contrast to Cox's argument that posterior annular and longitudinal ligament forces overcome and reverse nuclear migration posteriorly, McKenzie states that "Moreover, the posterior longitudinal ligament with which the posterior annulus blends, is a relatively weak structure, whereas anteriorly the annulus blends intimately with the anterior longitudinal ligament."¹² The posterior part of the annulus is the weakest part; the anterior and lateral portions are approximately twice as thick as the posterior portion where the layers appear to be narrow and less numerous. The fibers in adjacent layers are oriented more nearly parallel to each

other, and there is less binding substance."¹³

In summary, the posterior structures of the discs appear to be too weak (besides which they are noncontractile) to reverse pressure pushing disc material posterior. In addition, if when we bend forward, such reversal occurs, it would seem that we would be forced to bend backwards as a result of migration of the intervertebral disc material which is contrary to our everyday experience.

In fact, empirically determined experience is what the McKenzie system is all about! Empirical truths, not theoretical formulation is what his method adheres to. The phenomenon of how the patient feels in relationship to his movement and positioning is fully described and intimately related to diagnostic classification and treatment strategy. This fact in itself precludes the search for diagnostic and therapeutic secrets or esoteric techniques beyond the patient's symptomatic experience.

The system utilizes singular and repetitive movements of flexion, extension, and lateral glide (combined rotation and lateral flexion) performed by the patients themselves to both diagnose and treat. These movements are performed standing, sitting, lying prone, and supine. The behavior of the patient's low back and leg pain before, during, and after these movements are the predicating factors of treatment. That is, it is what the patient feels, not what or how the therapist feels that steers the therapeutic course. The behavior of the patient's pain in relationship to movement and positioning classifies the patient's syndrome as being postural, dysfunction, or derangement disorders of the joints. The behaviour of the patient's pain in relationship to movement and positioning determines which pains are permissible to increase with movement and positioning and which pains are deleterious to increase thusly.

In this regard, the system also indicates when prohibitive movements may be reintroduced. The true beauty of this system is that by using movements and positioning to both diagnose and treat, it opens up the possibility of self treatment in a large majority of cases. After a trial of such self treatment, manipulation movements can be introduced if and only if self treatment fails. This is required in a minority of cases and is applied according to information gathered from examining the behavior of patient's pain to movement and positioning that they perform themselves.

The McKenzie system proposes a conceptual structure that predicates therapeutic procedures on normal physiology rather than on the pathological case. In cases of low back pain that radiate to the extremities, the therapeutic concept and goal of "centralization" is advanced by Robin McKenzie. This entails the attempt to decrease the degree of peripheral pain, "shrinking" it back to its central origin. This concept observes the phenomena that certain movements or positioning may decrease radicular pain while increasing centralized spinal pain. This is taken as therapeutically beneficial,

and such centralized spinal pain should not be avoided especially if it results in maintained relief of leg pain. This retreat of peripheral pain known as "centralization" is often the reverse of its ontogeny and has been empirically observed to be beneficial. In addition, the McKenzie system considers pain of chemical versus mechanical origin as well as an ability to systematically detect pain resulting from nerve root adherence.

It must be remembered that Robin McKenzie's system uses movements in all directions based on the systemic application of findings. Nonetheless, this paper has stressed that flexion therapy has been unwittingly overemphasized in physical medicine. Recall earlier in this paper the reasons for flexion were considered. Pain avoidance was given as a reason, but, within the McKenzie system, certain pains are considered beneficial. In addition, we concentrated on extension as opposed to flexion, although this is not exclusively the movement that McKenzie utilizes (although it is a movement that he has successfully introduced as an option).

It has been stated by some that in the course of evolution of the human being, the transition from all fours to the standing posture created back problems.¹⁴ I do not believe this to be true. I consider the problem to have been when human beings realized they were standing and decided to sit down and think about it! Soon after, this occurred, lordotic posture of the lumbar spine which was promoted in the dependent gravity position on all fours was lost. Although the McKenzie system does use flexion, it is initially used in only a minority of the cases. This is because flexion is considered an ubiquitous causative factor in most cases, considering the amount of our lifetime we spend sitting, flexed forward, sleeping in the fetal posture, or, depending on our lifestyle, assuming the crash position! In other words, if flexion therapy was the universal cure for low back pain, the amount of time we spend in flexion should have eradicated low back pain long ago.

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