When Did Belt Use Get Started?
Corsets have been used since early 1900's for the treatment of scoliosis and back pain and quite possibly much longer. Therefore it is logical that a lifter, wanting to make the right decision, would choose to use a belt based on the medical establishment’s use of belts, especially considering the history and treatment of back pain dates all the way back to 1500 BC (1).

A Look At The Belt Your Were Born With!

The Inner Unit – Sagittal View
The Inner Unit serves to stiffen the axial skeleton in preparation for work. The Inner Unit muscles are A) Transversus Abdominis and the posterior fibers of obliquus internus, B) Diaphragm, C) Deep Multifidus, D) pelvic floor musculature.

The Inner Unit Transverse View
When activated, the transversus abdominis and posterior fibers of the obliquus internus draw the umbilicus inward toward the spine (see arrow). This creates intra-abdominal pressure and hoop tension, which serves to stabilize the lumbar spine.

Intra-abdominal Pressure Mechanism Applied
When lifting any heavy object, the load is transmitted downward through the spine to the legs (A). To stabilize the axial skeleton and minimize compressive loading of the lower lumbar segments, the transversus abdominis and posterior fibers of the obliquus internus should draw the umbilicus inward. The hoop tension created by activation of the deep abdominal wall pushes the viscera upward into the diaphragm and downward into the pelvic floor (B). Because of the innate tendency to hold one’s breath while under load, there is increased tension in the diaphragm, producing a lift force via the tendons of the diaphragm.

Hydraulic Amplifier Effect

The Hydraulic Amplifier Mechanism
Gracovetsky - the extension force produced by expansion of the erector spinae muscles within the compartment created by the thoracolumbar fascia and lamina groove of the spine is a significant contributor to one’s ability to lift a load. The expansion of the muscles within the thoracolumbar fascia produces intra-compartmental pressure (ICP). The cylinder is stabilized by synergistic activation of the transversus abdominis (TVA) and posterior fibers of the internal oblique (IO).

The Inner and Outer Units Simplified
The outer unit muscles of the trunk demonstrated here are rectus abdominis (A), internal and external obliques (B), erector spinae (C); the outer unit actually contains other muscles, which have been excluded for simplification. The inner unit is demonstrated here as the multifidus (D) acting as segmental stabilizers for the
purpose of controlling joint stiffness. To tighten the guy wires (A-C), which provide gross stabilization of the ship’s mast without synergistic tightening of the segmental stabilizers (D) would obviously result in increased potential to buckle the mast. The mast represents your spine!

Hoop Tension Demonstrated

*Left:* Without external influence from hoop tension, the snake’s spine (like the lifter’s) is free to move, under direct influence of the snake’s muscles.

*Right:* When you grasp a snake, you create hoop tension around the snake’s body with your hand, immobilizing the snake’s vertebra. Although the snake will continue to try and wiggle out of your hand, it will be unable to produce gross movements of its spine in the region of hoop tension as produced by your hand.

Intrinsic Hoop Tension vs. Extrinsic Hoop Tension and Spine Stabilization

A1) Because the transversus abdominis and internal oblique muscles place lateral tension on the thoracolumbar fascia, which is intimate with the transverse processes and spinous processes of the lower lumbar segments

A2), *intrinsically generated hoop tension actually provides segmental stability.*

B1) Tightening a weight belt around the waistline compresses the abdominal viscera, but there is no direct connection to the spine.

B2) Although the belt provides gross stability/immobility through increased intra-abdominal pressure, the compressive loading and faulty recruitment patterns often associated with lifting with belts may continue to produce aberrant motions at segmental levels of spinal joint structures. Once the belt is removed, the same faulty recruitment patterns, unaided by the gross stability of the belt often result in joint derangement, particularly in the L4/5 and L5/S1 motion segments.

Sensory-Motor Amnesia

Transversus Abdominis Conditioning

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**Transversus Abdominis Testing**

An indicator of normal TVA activation is demonstrated by the ability to reduce the pressure reading by 10mmHg. Those with faulty recruitment patterns commonly increase the pressure registered on the BPC, which is an indicator of rectus abdominis dominance; a common finding among belt users.

**The 4 Point TVA Exercise**
Lower Abdominal Coordination Testing

Lower Abdominal Coordination Test.

The World’s Greatest Weight Belt!
Once you have passed the lower abdominal coordination test and can decompress the BP cuff for 100 seconds or longer at 10 mmHg less than where the needle started, it is time to integrate your deep abdominal wall into your general movement schema and gym exercises.

It is well documented that coordinative patterns of the abdominal wall are task specific; one may have normal abdominal wall function during a squat pattern, but not a push pattern for example. Additionally, loss of abdominal wall coordination is easier to prevent than to restore. This should give those of you considering use of a weight belt adequate reason NOT TO!

To best condition your body, it is important to focus first on learning to activate the abdominal wall while performing “Primal Pattern® Movements”. Primal Pattern® Movements are the movement patterns most likely to have been necessary for our developmental survival as dictated by the selective pressures of nature.

The seven Primal Pattern® Movements are:
1. Squatting
2. Lunging
3. Bending
4. Pushing
5. Pulling
6. Twisting
7. Gait (walk, run and sprint)

Conclusion
Once you have implemented the training techniques described here, you will be free from training with the belt and have full confidence that your body now works correctly. If you have any orthopedic problems at all, it would be wise to consult a C.H.E.K Practitioner or a skilled rehabilitation professional that understands the science of corrective exercise to aid you in your quest to be “BACK STRONG AND BELTLESS!”

References

For a complete list of references, please e-mail the C.H.E.K Institute.

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