

Trunk Control by the Use of Corsets, Girdles or Belts

By CHARLES L. LOWMAN, M.D., Los Angeles

There are three main therapeutic reasons for the use of corsets in orthopedic practice:

- 1) Support for relief of pain or soreness;
- 2) Limitation of motion or partial immobilization;
- 3) Control of faulty posture by preventing the assumption of poor segmental position from fatigue.

1. Pain in the sacrospinal or cervicodorsal areas may be relieved or ameliorated by support of muscles held tense to discourage motions called muscle spasm, that would aggravate a joint or soft tissue lesion. Such spasm is nature's red flag to warn of the need for rest or favor of the sore place. The character and location of the pain may require only bed rest or the discontinuance of activities that provoke pain and spasm. Fixed immobilization by means of a cast or rigid brace may also be needed until the severity of the symptoms can be brought under control. After this, the patient usually cannot be allowed to be completely mobile and a full length, medium or low corset is indicated.

2. When motion of a certain kind or degree causes pain, a corset with or without reinforcement may be of use by restricting back motion to an allowable degree until physical therapy treatment and prescribed exercises can control recurrent symptoms.

3. To maintain correct body balance and prevent relapse to former bad postural habits as well as to relieve so-called postural strain, a corset made to a corrected position of the body and not fitted to the body's habitual incorrect shape, aids in obtaining neuromuscular registration of the new corrected position. It is an arbitrary control, along with treatments and exercises, aimed to stretch tight muscles and ligaments and slacken stretched out opponents. Then, as balance between the antagonistic groups is restored and a relapse to former bad positions is controlled, the patient becomes more comfortable. He says, "I've become used to this harness and it doesn't annoy me any more." This indicates that the sensory registration of muscle states and joint positions has become balanced.

When the postural exercises have obtained balance control of the new or corrected position, the corset is no longer needed but may be used occasionally for heavy work, long standing, on motor trips, etc.

A regular body brace and a corset are used for much the same needs. But requirements differ in the character and degree of the symptoms and the sex and age of the patient. Women are usually horrified at the idea of wearing a brace, even though the surgeon feels that she should have rigid immobilization. The fact that a brace is difficult to cover up by her clothing may make it unacceptable to her. The most tactful solution to the problem is for the surgeon to say nothing about a brace but instead, recommend a surgical corset. In this corset he may put heavy steels in the back and also add side steels of a double T type. The steels are covered with webbing and sewn to the corset.

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Date _____, 195_____

Prescription for _____

By Dr. _____

TYPE: Posture _____ Surgical _____ Maternity _____ Kidney _____

BACK: High _____ Medium _____ Low _____

FRONT: High _____ Medium _____ Low _____

STEELS: (Molded) Top _____ Bottom _____ Middle _____

Guage: 14 _____ 16 _____ 18 _____ 20 _____

Regular _____ Wide _____ (Over Scapulae) Right _____ Left _____

SHOULDER CONTROL: Narrow _____ Medium _____ Wide _____

SKIRT: Regular _____ Short _____

PELVIS: Regular _____ Fenestrated _____

PADS: Abd. _____ Sacral _____ Kidney _____ Hemia _____ Sit-Pad _____

LACING: Front _____ Back _____ Maternity (2-lace) _____

INNER BELT _____ CINCH STRAP _____

GIRDLE TYPE BELT: 6" _____ 8" _____ 10" _____ 12" _____ high.

Sacral Pad _____ Abdominal Pad _____

Lowman Type _____ Side Buckles _____

BELT: Solid front with side buckles _____

SACRO-ILLIAC BELT: (stock) _____

BRASSIERE BACK: Regular _____ Medium _____ Full _____

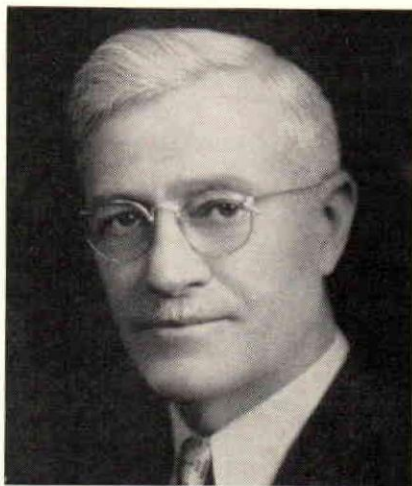
STRAPS: Straight _____ Crossed _____ Narrow _____ Wide _____

Shoulder control _____

REMARKS: _____

TYPICAL PRESCRIPTION BLANK

Dr. Lowman received his degree from the School of Medicine, of the University of Southern California in 1907 and began the practice of medicine that year. He was the founder of the Orthopedic Hospital in Los Angeles, was elected to the American Orthopedic Association in 1921 and is at present Vice President of this Association. In 1934 he was elected to the American Academy of Orthopaedic Surgeons. Dr. Lowman is now Director of the School of Physical Therapy at the University of Southern California. He is Emeritus Chief of Staff of the Orthopedic Hospital and a consultant in education and rehabilitation of the Orthopedic Hospital. Long active on the staff of the Orthopedic Hospital in Los Angeles, he has contributed to the professional growth and training of a generation of California orthotists and prosthetists.



Charles LeRoy Lowman, M.D.

If it is necessary to control scapulae and shoulders, the back steels for the high type corset should be set 5 inches apart instead of the usual 3 inches. This allows the upper end of the steels to be bent enough to lie flat on the scapula without rubbing on the prominent inferior vertebral border.

To obtain adequate control and prevent a forward drag of the head that would make the upper end of the corset protrude under the dress, it is necessary to use shoulder straps or a solid back bra. The former are to be recommended for young girls and flat chested women with poorly developed breasts. These straps should be from one inch to two inches wide; there should be a central section of good elastic on either end of which two sections of tubular stockinette or wide lamp wicking are placed for the axillary area and from in front of the shoulders across the back and down to buckles in front. These are passed horizontally through carriers behind, carried forward and up over the shoulder crossing. They are passed again through the loop or keeper on the opposite side and thence down obliquely to the buckle just above, and two inches in from the anterior spine of the ilia.

On the bottom of the corset, just below the level of the anterior spines, a cinch strap 2 inches wide of non-elastic webbing may be passed through carrier loops and buckled in front. This should be independent of the corset, so that it can be tightened to compress the pelvis laterally without making the rest of the body of the corset uncomfortably tight.

It may be desirable to make a complete metal pelvic ring to take the place of the cinch strap and pass it over the back uprights to which it may be fastened by snaps on loops of webbing. In principle a back brace has been made but, since no metal is exposed and it has been called a surgical

corset, the woman's objections will have been overcome. Later, as a patient improves, the corset can be divested gradually of the reinforcements and made into a regular corset.

Such a corset can easily be converted into a maternity corset. This is done by placing a row of eyelets or hooks from just in front of the anterior spines up to the top of the corset. It is then fastened with three laces, placed about 6 inches apart. The bottom one pulls up tight to grip the pelvis, the next has less tension, as does the top one, as the abdomen enlarges. Shoulder straps or bra control the upper back and shoulders. Thus, the weight of the heavy abdomen is carried by the upper spine and trunk and not in the lumbar area as many maternity corsets place it.

In cases where shoulder girdle control is not needed, the medium height corset is effective. Its upper edge should lie just below the lowest point reached by the tips of the scapulae, so that when the shoulders are held back the lower scapular angle will not impinge. Since this is high enough to bridge over the lumbar area, the lumbo-dorsal junction as well as the sacrolumbar are controlled. It is not sufficiently appreciated that these areas are where the greatest postural stress exists because they are the points where a stiff section of the column joins a movable one. These levels correspond to the location of the solar sympathetic plexus above, and the sacrolumbar or sciatic plexus below. This accounts for the radiation or reflex pains in abdominal intercostal and loin area and those in the legs which so commonly accompany back pain.

This medium height corset, with 16 gauge steels and a pelvic cinch strap, is the equivalent of a short back brace of the chair back type, i.e. a Williams or a modified Taylor brace.

A short, waist high corset is seldom indicated unless there is no lordosis or actually a flat lumbar area. Then it can be used for more localized sacroiliac symptoms as differentiated from sacrolumbar. Such a corset is also useful for part time wear in the convalescent stage for a woman to use for special occasions.

It may be of interest to observe that the use of the so-called sacroiliac belt so commonly used by insurance doctors and surgical supply houses is of questionable value. Since most cases are sacrolumbar in character, they should have the support to the entire lumbar area which can be accomplished only by the bridging support mentioned above. This will require a girdle with a 9 or 10 inch height at the back, with steels of sufficient stiffness to maintain the proper curve into which they may be bent. Consequently the surgical girdle for a man is the equivalent of the medium or medium-short corset described above for women.

Regarding shoulder straps used in connection with corsets or braces, lifting the arms tends to pull up the apparatus, so counter control such as peroneal straps or garter straps should be prescribed. However, when a prominent or pendulous abdomen exists, these may not be necessary.

As to fastenings, there are many opinions and preferences in regard to fixation. Some use front-laced corsets, some back-laced. We prefer the latter when possible since we wish to have the pull toward the spine and not away from it. However, in cases of arthritis or paralysis with hand involvement, the patient may not be able to reach to the back or be strong enough to pull the lacings. In these cases, a front fixation of flat hooks and slide buckles is useful on the side opposite to the best hand.

The length of the skirt can best be left to the patient and the corsetiere. For children and young girls a short type corset without a skirt is sufficient to maintain proper spinal alignment in the anterior posterior plane. It may be held down with leg straps, and to be more positive and to save a mother's time, front fixation with strap and buckle is advisable.

Some accessories such as pads should also be judiciously used as they can be both helpful and comforting. Hernia pads should be placed where indicated by the patient's medical advisor or surgeon, who should also prescribe shape, size, and thickness. The urologist may order a kidney pad placed over one side of the abdomen and attached to the corset. When the corset is put on in the lying position it will depress the abdominal wall and make a shelf support for a floating kidney.

The orthopedic surgeon may prescribe a sacral pad $\frac{3}{4}$ of an inch thick, 6 inches long, $4\frac{1}{2}$ to 5 inches wide at the top, and 2 inches at the bottom. This will about fit the rhomboid of Michaelis, which is the depression over the sacrolumbar area and between the posterior superior spines of the ilia. This pad should be stitched to one side of the corset, just outside the lacing space in the back-laced type corset, or fixed directly in the solid back type. In either case it makes pressure against the too soft tissues of the area when sitting or lying, and has the effect of a compression pump which helps to deplete congestion and often is a great comfort.

Thin protective pads placed over bony scapulae, or on either side of the spine when posterior spinous processes are so prominent as to be irritated from pressure, are also indicated. Surgeons are not always careful as to where they place pelvic incisions. Often, if they have not taken into consideration the pressure areas from corset or brace, they will find the patient much harassed by pressure over the scars. Over the iliac area the skin incision should be above, and not on or below the crest. Otherwise, the skirt or pelvic band will cause pressure.

CONCLUSIONS

Surgical corsets are important for relief of pain, limitation of undesirable motion and improvement of posture. They bridge the sacrolumbar area and give support to the entire lumbar area. They will be accepted by women who would refuse a body brace. High, medium and short corsets supply varied needs. Lacings, fixation and length of skirt should be suited to the individual cases. Suitable placement of pads in corset contribute to patient's comfort. Care should always be taken that the corset does not press on a scar.

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