[IMAGE]

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Treating Postural Deficits with Therapeutic Exercise

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As we saw in an earlier article in this series, "Orthotic Therapy for Postural Support" ("DC," 2/26/96, page 14), many of the conditions that chiropractors treat show marked improvement when the issue of postural control is addressed. Few patients seek professional care for bad posture yet defects can cause or contribute to many painful musculoskeletal problems.

This article looks at the important role therapeutic exercise performs in achieving and maintaining postural health. Exercise that addresses specific areas of muscular imbalance contributes to improved postural integrity and total musculoskeletal health. And when the National Board of Chiropractic Examiners' most recent survey is consulted, it is not surprising to discover that 95.8% of all chiropractors polled chose "corrective/therapeutic exercise" as a useful, non-adjustive technique.[1]

Healthy Posture

Posture is the body's response to natural forces of gravity and the stresses of daily living, whether standing, sitting, walking, or reclining. With normal erect posture, the body is in a state of intrinsic equilibrium, maintained by minimal muscular effort.[2] Healthy posture is largely determined by three factors: skeletal structure, soft tissue integrity, and neurological control. Breakdown in any of these components can result in subluxations, instability, weakness, and loss of neurological control. Likewise, three therapeutic considerations can be applied to postural problems: chiropractic adjustments, rehabilitative exercise, and support during daily activities.

Implications of Postural Distortion

Postural distortions can have a significant impact on musculoskeletal health. Constant structural malalignment allows a disproportionate amount of weight and pull to be inflicted on certain muscles, leading to pathological changes.[3] Chronic muscular strain has also been implicated in perpetuating myofascial trigger points.[4]

Specific clinical conditions where postural abnormalities have been identified as a causative factor include disc degeneration, neurovascular entrapment syndromes, chronic strains, and nonspecific musculoskeletal pain syndromes.[5] Imbalanced posture also requires more energy use and muscle contractions for support of the human frame.[6] It can lead to loss of strength and flexibility and detract from performance of even simple daily activities.

For example, consider anterior cervical translation, one of the most common forms of postural distortion (see Fig. 1). Every inch of forward displacement of the head requires a tenfold increase of muscular effort to support posture.[7]

Identifying Postural Distortion

Accurate detection is the first step in correcting postural distortions so that appropriate corrective exercise can be prescribed. A complete biomechanical postural analysis requires the patient to be standing, so that true integration of musculoskeletal structures can be observed.[8] The recommended procedure is as follows:

1. The patient stands before a full-length mirror, with heels about six inches apart.

2. The patient raises and lowers each foot about five times as if walking in place, stopping in a natural upright stance. The doctor checks for pronation, supination, in-toeing, or foot flare, all important signals to abnormal biomechanical relationships.

3. The patient is asked to close both eyes, then flex and extend the head, stopping in what feels to be a normal, comfortable position. Note that eyes must be kept closed for this maneuver.

At this point, the professional observes head position in relation to the thoracic region. Posterior or anterior cervical translation, excessive tilt from the midline, and rotational prominence of any facial features are important clues to postural defects throughout the musculoskeletal complex.

Many systems are commercially available today to aid in precise postural analysis. They can be as simple as a large grid painted on a wall, or as sophisticated as computer-based imaging equipment. A three-dimensional analysis system enables chiropractors to accurately evaluate postural progress over the

course of treatment. Such a system combines the simplicity of a grid with the documentation capabilities of computer-based systems, at greatly reduced cost and operating complexity.

Exercise Prescription

Once postural defects have been identified, exercise should be prescribed that serves to build strength in affected musculature, and trains the body in new postural patterns. Postural muscles are required to contract for long periods of time without rest, and are composed primarily of slow twitch fibers.[2] This means they respond best and strengthen fastest when worked in slow, controlled exercise.

This fact was proven in a study of static strength in the abdominal muscles. A group of training soldiers performed curl-ups at different rates of speed and number of repetitions. The group which performed exercise at a slow, controlled rate demonstrated better postural stability in the lumbopelvic region than did those who performed quick curl-ups.[9]

The mirror-image correction exercise protocol has been shown to be effective in addressing the muscular imbalance which distinguishes postural abnormalities.[10] Desired results are achieved by exercising in a direction opposite to the distortion. This strengthens and stretches muscles, retrains postural reflexes, and enhances neurological coordination.

Considering the body as an integrated unit with three main components simplifies exercise prescription. Defects will be most prominent in one of three regions: the cervical spine, the torso and pelvis, or the extremities.

A trio of low-tech exercise systems that follows this anatomical division is available from a leading supplier of health care products. Individually, the systems focus rehabilitative exercise activity on cervical spine structures, the thoracolumbar region, and extremity joints. Each of these systems allows the patient to perform variable resistance exercise that matches individual strength and ability levels while isolating movements to affected areas (see Fig. 2). All three systems include a full-color patient manual with complete instructions that can be personalized to the individual’s condition.

Recommended Guidelines

In selecting specific exercises to correct postural defects, the professional must carefully evaluate patient characteristics in light of findings from a thorough examination and treatment. The following general

guidelines can be broadly applied to all patients to encourage application of safe, effective activity.

1. Exercise should not produce pain. Safety and patient compliance are virtually assured when motions are pain-free.

2. Straight motions precede rotational exercise. A patient should be able to demonstrate stable straight-line movement before undertaking rotating activity.

3. Minimal range of motion precedes maximal ROM. The ability to perform pain-free activity is critical to effective exercise.

4. Protocols follow individual characteristics. Variances in frequency, duration, and selection of exercise enable a single exercise program to be adapted to the needs of a variety of patients. The prescribing professional is the ultimate judge of what is appropriate activity for each person.

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