Student's Corner

The compensatory pattern, as seen in art and osteopathy

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The osteopathic concept of the common compensatory pattern (CCP) originated during the 1970s with J. Gordon Zink, DO and Bernard A. TePoorten, DO, professors of osteopathic manipulative medicine at what is now Des Moines University (DMU). Drs. Zink and TePoorten collaborated on the diagnostic findings of many of their patients, allowing them to observe a common pattern. Results from these studies culminated in a theory that would later become a unifying concept in OMM labs and lectures at DMU. While their theory is unique in its relevance to osteopathy, one of the first recorded observations of a compensatory postural pattern can be seen in Greek sculpture as early as 480 BC. This would later be described by the Italian word, contrapposto, meaning counterpoise, or as one art historian describes it, a "balanced non-symmetry of the relaxed natural stance."[1]

The term, *contrapposto*, refers to the natural pose of a figure where "the parts of the body are placed asymmetrically in opposition to each other around a central axis."[2] The statue, *Cidian Aphrodite*, from 340-330 B.C. exemplifies the use of contrapposto in Greek sculpture (figure 1). Note the similarity in her pose to that of the common osteopathic hip-drop test (figure 3). Of this Greek discovery, one author writes, "contrapposto brings about all kinds of subtle curvatures: the bending of the free knee results in a slight swiveling of the pelvis, a compensating curvature of the spine, and an adjusting tilt of the shoulders."[3] This description should sound familiar to the student of osteopathy who is taught to study the natural curvature of the axial skeleton as it relates to diagnosis and treatment of somatic dysfunction.

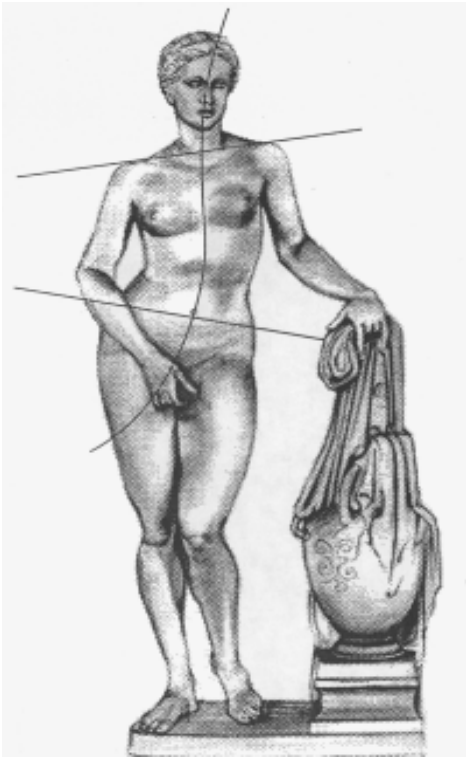

Figure 1: *In this rendering of the statue, Cidian Aphrodite, from 340-330 B.C., contrapposto is demonstrated by the S curve of the axial skeleton in relation to the tilt of the hips and shoulders in opposite directions.*

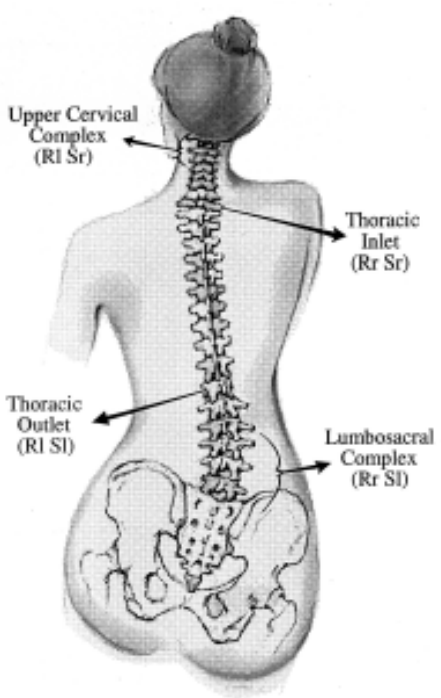

Figure 3: *This illustration of the osteopathic hip-drop test demonstrates the curves of the common compensatory pattern with its four major junctional areas.*

Grecian ideals influenced what was to become the next major period of advancement in the study of human form and function, the Italian Renaissance. Early work from this period is best represented by the Italian master, Leonardo Da Vinci (1452-1519), who is known for, among other things, structurally accurate studies of human anatomy. "Although Leonardo may not have been the first

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scientist of the modern world, he certainly originated the method of scientific illustration."[4] He set the stage for anatomists such as Andreas Vesalius (1514-1564), "a Flemish physician and professor of anatomy of Padua, where in 1543 he produced his *De humani corporis fabrica libri septem* (Seven Books on the Structure of the Human Body) and founded the modern science of anatomy."[5] The relevance of anatomic investigation to the philosophical ideology of the Italian Renaissance is explained nicely by one historian who writes:

"With proportion, (human anatomy) lay at the root of Renaissance aesthetics, for if man was the measure of all things, physically perfect man was surely the measure of all beauty, and his proportions must in some way be reducible to mathematical terms and correspond with those abstract perfections, the square, the circle, and the golden section."[6]

Western medicine grew out of this philosophy and the anatomical sciences provided the foundation for its growth. Through this brief historical perspective, we can see how early anatomical investigation influenced A. T. Still to form his theories on osteopathy. Just as early Western investigators sought to define principles of human biomechanics through careful measurement of human proportion. Still emphasized the importance of the "hands on" assessment of structural constitution as his means for diagnosing and treating medical conditions. His osteopathic principles pay special attention to evaluating musculoskeletal anatomy when assessing a patient's health status.

Following in Still's footsteps, Zink and TePoorten continued to expand on the deeply rooted Western concept of "form follows function". By drawing again on the comparison to Grecian contrapposto, the compensatory pattern can be described as a

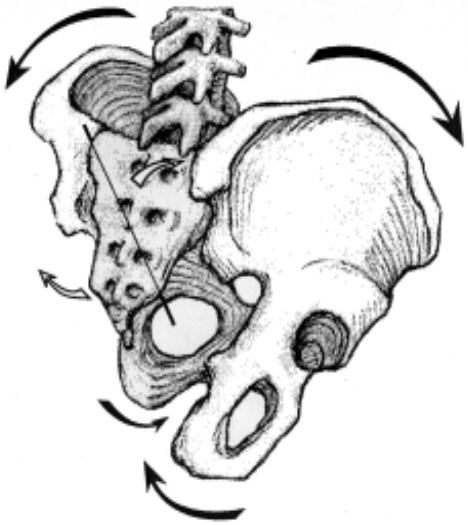

Figure 2: *The pelvic girdle is shown here with opposing rotational forces in the innominates that set up the uneven base upon which the lumbar spine responds to in its compensatory fashion.*

form of "balanced non-symmetry" where components of the axial skeleton are said to rotate and sidebend in directions opposite of one another around a central axis. This can be illustrated by rotational movement found within the pelvic girdle (figure 2). As the right innominate rotates to the anterior, inferior position, pulling the right sacral sulcus with it, the left innominate rotates to the posterior, superior position. This twisting in opposite directions creates the uneven base upon which the lumbar spine responds to in its compensatory manor, setting up a pattern of balance and counterbalance that extends all the way up the spine.

The common compensatory pattern is defined by ten diagnostic findings between the pubic symphysis and the upper cervical complex on palpatory examination (table 1). More importantly, there are four junctional areas that have the greatest liability for injury; the upper cervical complex, thoracic inlet, thoracic outlet, and lumbosacral complex (figure 3).[7] Dr. Zink "found that 80 percent of 'well people' had a particular compensatory pattern which showed fascial preference to rotate to the left at the occipitoatlantal area, to the right at the cervicothoracic area, to the left at the thoracolumbar area and to the right at the lumbosacral area (i.e. L,R,L,R)."[8] Just as the majority of "well" people exhibit the common compensatory pattern, the remaining group of "well" people are thought to have an alternating pattern in the opposite direction, referred to as the uncommon compensatory pattern. Individuals not fitting into either group are said to have uncompensated patterns due to trauma, making them slower to recover from illness and more conducive to congestion.[9]

The significance of these four junctional areas is associated with their attached diaphragms: tentorium cerebelli, Sibson's Fascia, thoracolumbar diaphragm and pelvic diaphragm, from cranial to caudal. These fascial planes serve as junctions between the cranium, thorax, and pelvis respectively. Opposing rotational forces at each junctional area are thought to create tension in the attached diaphragm, thereby increasing

Table 1. *Ten Principles of the Common Compensatory Pattern*

1.	Innominates	Anterior, Inferior Right (AIR)
2.	Sacrum	Left on Left Sacral Torsion
3.	Lumbosacral Complex	Rr Sl
4.	Thoracolumbar Junction	Rl Sl
5.	Tenth Rib	Posterior on the Left
6.	Fifth Rib	Locked up on the Left
7.	Third Thoracic Vertebrae	Rr Sr
8.	First Rib	Sr
9.	First Thoracic Vertebrae	Rr Sr
10.	Upper Cervical Complex	Rl Sr

resistance to the circulatory flow that traverses it. "Low pressure fluids (venous and lymphatic) are returned to the heart to complete the cycle of circulation mainly by pressure differential of the diaphragms."[10] Dr. TePoorten claimed that, "the worst enemy of physiologic function is the torsioning of fascial planes. The common compensatory pattern is a series of myofascial torsions that are compatible with physiologic function until the prime organ system, the musculoskeletal system, is stressed."[11]

Dr. David R. Boesler, current chairman of OMM at Des Moines University maintains that "by treating these 4 transitional areas, 80-90 percent of patients will show improvement in their condition," underscoring the relevance of this concept to the use of OMT in a fast-paced medical practice. He states that treating the compensatory pattern will 1) relieve myofascial torsions, 2) affect the autonomic nervous system, 3) improve diaphragmatic function, and 4) improve venous and lymphatic flow. Finally, one of the most important aspects of CCP is that it provides a blueprint to follow when treating the axial skeleton. This really makes it a useful tool for learning OMT and a valuable concept for every student of osteopathy.

References

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