

2-HOUR CEU OUTLINE - 2023 CSW Fall Experience – Dr. Nick Gatto

**INVOLUNTARY MUSCLE CONTRACTIONS:
The Body's Many Signs of Energy Deficiency**

The presentation will be divided into the following five segments:

1. Introduction

The Best Kept Secret about the Musculoskeletal System

We all understand the term “stress” and recognize it when we feel stressed. But few understand that to be stressed really means we do not have sufficient energy to deal adequately with the events that are “stressing us.” Even fewer realize that one constant stress in our lives is the effect gravity is having on our bodies. We are all constantly struggling against gravity, regardless of whether we are standing, sitting, or lying down.

All biological processes are accustomed to the ever-present force of gravity and even small variations in this force can have a significant impact on health and function. Gravitational forces influence musculoskeletal systems, as well as fluid distribution and circulation.

Chiropractors are trained to recognize the influence gravity has on the body and recognize our musculoskeletal system is designed to not only provide us with a means of moving about but also is constructed to oppose gravity. But that takes energy.

2 – The Body Requires Energy for Three Separate Systems:

Brain and Central Nervous System

Maintain emotional and cognitive stability

Visceral Organs

Maintain homeostasis in the extracellular fluids

Structural Tissues

Kinetic Energy for movement

Potential Energy to oppose gravity

Voluntary muscle contractions

Involuntary muscle contractions

When involuntarily contracted muscles are called upon to produce movement loss of joint range of motion, the occurrence of the many symptoms that accompany that including pain.

Energy deficiencies result when various stimuli stress any of the above systems. The body stores glycogen to meet these contingencies and can rapidly convert it to glucose and deliver it where it is needed. Glycogen is the main storage form of glucose in the human body and is stored in the liver and skeletal muscles with small amounts in your brain.

3 - How Energy is Produced

The term metabolism refers to the various series of chemical reactions that take place within the body. After nutrients have been delivered to the cells via the extracellular fluid (ECF), there are two forms of cellular respiration that convert food energy into **adenosine triphosphate** (ATP - a form of energy):

- **Aerobic**, which involves oxygen from the bloodstream
- **Anaerobic**, which does not

These systems usually work concurrently, therefore when describing activity it is not which energy system is working but which predominates.

4 – Palpatory Examination for Involuntary Muscle Contractions

Potential Energy - A muscle under normal tension and not contracted receives proper nourishment through adequate blood supply. The same muscle when voluntarily contracted, as during exercise, will require increased nutrition and increased waste removal (lactic acid).

What is not readily appreciated is that continued involuntary muscle contraction is a compensatory necessity as the body resists the constant effect of gravitational pull.

Inadequate blood supply and excessive accumulation of lactic acid cause the muscle to become fatigued and sore or painful to touch. This muscle contraction is easily identified by palpation.

A working knowledge of anatomy coupled with proper palpation can reveal which segments of the body are being distorted from the gravity center line by structural misalignment.

Corrections - By making corrections moving in a headward direction changes will continue until normal balance has been restored to the body, at which time bilateral segments under comparison will elicit equal myotonic status. Specific areas that require attention can be readily discerned with postural evaluation in both the standing and sitting positions. These checks can be accomplished normally within a few seconds, depending upon patient cooperation and the doctor's agility.

5 – Demonstration of a Screening Test Done in the Sitting Position

The demonstration involves screening for involuntary muscle contractions and loss of joint range in the cervical and upper thoracic spine and shoulder. Palpation for loss of normal thoracic kyphosis and related involuntary muscle contractions. And palpation for an unlevel pelvis in the sitting posture with involuntary muscle contraction palpation and related pelvic misalignments and effect on the lower extremities.