



Muscle System Specialist™ Advanced Course

“Decision Making, Session Planning, and Exercise Process”

Course Objectives:

1. Review the Philosophical Construct informing the Methodologies outlined in the course.
2. Review the literature and science methods that inform the Philosophy and Methodology put forth.
3. Discuss how to read/interpret data collected from Client Assessment Samples in terms of how to build plan and where to begin the first session
 - a. How to corroborate and weight different information.
 - b. How to build client plans
4. Review, in detail, the QMAMC and the SARS application, interpretation, and utilization.
5. Introduce new terminology and process for the various modes of joint/limb/trunk angle and muscle attachment distance change. (Isometric, Miometric, Pliometric)
6. Discuss Post Activation Potentiation and its relationship to the QMAMC and motor control
7. Discuss application of Isometrics, Miometrics, Pliometrics, and their combinations.
6. Improve the practitioners’ ability to meet the client where they are as far as initial force application, volume, and intensity (assessing and balancing risk).

Course Goals:

1. Learn new processes for improving motor control
2. Reinforce existing knowledge and competencies
3. Create an open dialogue and sharing about new ideas and ways of addressing - via exercise - movement issues presented by clients.
4. See deeper and broader understanding of muscle function and strategies and techniques to improve it.

“The more you understand something, the more someone can work with it.”

F. Duncan Haldane, Ph.D.
Physicist – Princeton University
Noble Prize Recipient in Physics 2016



1. Review the Philosophical Construct informing the Methodologies outlined in the course.

My seminal premise is that the human body is a complex system with the fundamental objective of producing and controlling the voluntary motion of its parts, and maintaining its position, in space-time. Broadly described as bio-motor control. All aspects of the system directly, and indirectly, converge on this elemental notion. Any subsequent analysis, interpretation, and conclusions discussed, and described, in this course are based on this axiom. My professional role is to leverage the intrinsic potential of the bio-motor system to improve its capabilities to meet the client's fundamental objectives regarding their health and wellness.

“When one deals with a complex system, the first step is always to define a set of notions that are meaningful for the chosen system or a chosen level of analysis. These sets of notions are typically selected rather arbitrarily, based on intuition, common sense, and general knowledge of physics, chemistry, and certain other disciplines. After a set of notions (an adequate language – a term introduced by a great mathematician, I. Gelfand) has been chosen, the system can be investigated.”

Latash, Mark, L., Neurophysiological basis of movement, 1998, page ix.

Complex (n.) - a whole made up of complicated or interrelated parts.

Miriam-Webster Dictionary

System (n.) - a regularly interacting or interdependent group of items forming a unified whole <a number system>: as **a (1)**: a group of interacting bodies under the influence of related forces <a gravitational system> **(2)**: an assemblage of substances that is in or tends to equilibrium <a thermodynamic system>.

Miriam-Webster Dictionary

*“According to the Encyclopedia Americana, a system is ‘... **an aggregation or assemblage of things so combined by nature or man as to form an integral and complex whole ...**’”*

Brogan, W., *“Modern Control Theory”*, 3rd Edition, 1991, Pg. 2

“A system will be said to be complex if the whole transcends the parts” (20)

“When we describe something as complex, we mean that it consists of interdependent, diverse entities, and we assume that those entities adapt – that they respond to their local and global environments.” (20)

“A complex system is capable of producing structures and patterns from the bottom up. It does not settle into a simple pattern but instead is a source of near perpetual novelty. It is not in equilibrium, nor is it chaotic.” (20)



Exercise provides the medium for observing the system express this fundamental notion in real time.

“Exercise is not a mere variant of the condition of rest, it is the essence of the machine”
Sir Joseph Barcroft 1934

"In as much as the physiology of exercise is actually the total physiology of a nonresting, nonsupine individual, all areas of physiology are essential because there is no physiological function, regulation, or control that is not vital (i.e., exercise physiology = physiology in toto)."

Loring B. Rowell, Ph.D.

Exercise (n.) – a specific bodily or mental exertion, or the removal thereof, especially for the sake of training or improvement of health. Force (stimulation) applied, or removed, over some time interval to, and/or from within, a bio-motor control system, resulting in a bio-motor configurational response, with the intention of making or maintaining a desired physiological change or system state. An exercise is possibly a prototypically defined construct that makes it difficult to specify any single set of features and properties, each of which is by itself necessary, and all of which are jointly sufficient for an individual executing a physical action with an intended purpose (or not) to be labeled “an exercise”. An “Exercise” is not a classical concept with a clearly specified set of necessary defining features and variables.

Greg Mack 2016

Exercise Process (v.) - bodily or mental exertions, or the removal thereof, especially for the sake of training or improvement of health, as a systematic series of bodily or mental actions, or inactions, over an extended period directed to some end. aka - The Exercise Continuum.

"[Q] Where do you see the exercise science field (particularly your area of greatest interest) heading in the next 20 years? [A] This field may play a more vital role in the biological sciences than we had once imagined. If the basic life scientist's rush to apply their expertise to provide functional meaning to the genetic code, as is expected, who will be left to teach basic human biology and physiology? Who will explore the functional consequences of aging, for example? Who will discover what controls breathing and the circulation during exercise? Who will do the systematic, integrative science that reveals how whole organ systems and organisms actually work? These questions are not likely to be answered by reductionists (e.g., molecular biologists) working upward from molecules to cells to systems – this is in the wrong direction!"

Loring B. Rowell, Ph.D. [As cited in McArdle, Katch, & Katch's Exercise Physiology: Energy, Nutrition, and Human Performance, 5th Edition. (2001)]