A Specific Adaptation to Exercise (Increase Glycogen Storage in Muscle)
General Pattern of Exercise response
(A Single Bouts of Exercise)

- Exercise: Homeostasis disturbance
- Receptor: Nerves, Hormones, Organs
- Target Organ: Heart, Lungs, Muscles
- Response of Functional Change: Increase Heart Rate, Respiration, Blood Flow, etc.
- Opposes Homeostasis Disturbance
A specific Adaptation to Exercise

The Human Body

Exercise session causes decline in Chemical Energy in The muscle

Receptor: Enzym of Glycogen Break Down

Response Pathway: Activation of Enzym of Glycogen Break Down

Adaptation Pathway: DNA/RNA for Producing More Active Enzym to Synthesize Muscle Glycogen

Target Organ: Working Muscle

Adapted Response: More Glycogen for More Energy

Opposive Fall in Energy
Respiratory System

- Homeostasis Disturbance: Exceed CO₂ in Blood
- Sensoric: Nerve Cells in The Brain
- Integrator: Group of Nerve Cells
- Regulator: Nerve Cells Controlling Breathing
- Opposite Effect: Faster Breathing, Lowers blood CO₂
Aerobic Adaptation to Aerobic Exercise

- Increase mitochondria’s capacity to generate ATP aerobically by oxydative of phosphorilation
- Increase capacity for mitochondrial oxygen uptake: the size and number of mitochondria twofold increase in the level of aerobic system enzymes
- Skeletal muscle myoglobin content of animals increase by 80%: oxygen within the cells raises, facilitates oxygen diffusion to the mitochondria
- There is an increase in the trained muscles’s capacity to mobilize and oxydize fat; increase blood flow within muscle and activity of fat-mobilizing enzymes in trained person. Uses more free fatty acids for energy than untrained counterparts at subsmaximal of work rate
- Trained muscle also exhibits greater capability to oxydize carbohydrate; larger quantities of pyruvic acids moves through the aerobic pathway. Increased oxydative capacity of the mitochondria and glycogen storage within the trained muscle.
- Aerobic training produces metabolic adaptations in the different types of muscle’s fibers. Generally, the basic fiber’s type does not change, but all fibers develop their already existing aerobic potential.
- There may also be selective hypertrophy of muscle fibers to specific overload training. Highly trained endurance athletes show larger slow-twitch fibers than fast –twitch fibers in the same muscle, vise versa.