- Anaerobic glycolysis and lactic acid formation- initial step of glucose breakdown and does not require oxygen; in cytosol; glucose broken down to pyruvates and 2 ATP per 1 glucose molecule generated; if no oxygen, pyruvates converted to lactic acid; it is 2.5 times faster than aerobic, so provides enough ATP for 30-40 seconds
 - Two big flaws
 - Uses huge amounts of glucose for small amounts of ATP •
 - Lactic acid promotes muscle soreness

Muscle fatigue- overwork muscles without resting, causing they to contract more weakly or even stop contracting

- Believed to be cause by oxygen deficit (not able to take in oxygen fast enough to keep muscles • supplied); leads to recovery period after vigorous exercise, heavy breathing until ATP and CP reserves supplied and lactic acid gotten rid of
 - How long and how much work muscle can do depends on blood supply
 - Causes accumulation of lactic acid
 - ATP runs low
 - Electrolyte imbalance

Muscle Contractions- All muscle contractions have tension as most at bob bridges try to make actin slide

- Isotonic contractions (same tone) invofilaments successful in liding movements, muscle shortens, and movement occurs (smiling ar example
- Isometric contractions (same measurement) when muscles do not shorten; myofilaments rying but can't slide because muscle pitted against immovable or nearly immovable object (pushing against a wall)

Muscle tone- continuous state of partial contractions

- Not consciously controlled; some muscle fibers always contracting (one group than • another);
- Not visible
- Keeps muscle healthy •
- Result of different motor units being stimulated by systematic nervous system ٠

Exercise on muscle system

- Inactivity- leads to muscle weakness and wasting
- Regular exercise- increases muscle size, strength, and endurance
 - Isometric (resistance)- weight lifting; muscles pitted against immovable or nearly 0 immovable object; require little time and no special equipment; key is forcing muscles to contract as much as possible; does not improve endurance; causes
 - Increased muscle size
 - Increased strength

 Trcieps Brachii- only muscle at back of humerus; three heads arise the shoulder girdle and proximal humerus and inserts into olecranon process of ulna; prime mover of elbow extension and antagonist of biceps brachii; called boxer's muscle

Muscles of Lower Limb- cause movement at hip, knew, and foot joints; largest, strongest muscles in body; specialized for walking and balancing the body; pelvic girdle composed of heavy, fused bones that allow little movement, no special muscle groups is necessary to stabilize it (versus shoulder girdle, which requires lots of fixators); many muscles span two joints and can cause movement at both them (making origin and insertion interchangeable); (technical term for leg is from ankle to knee); thigh muscles help hold body upright against gravity and cause various movements at hip joint (attachment at pelvis girdle); leg muscles cause movements of ankle, foot, and toe joint

- Muscles that Cause Movement at the Hip Joint
 - Gluteus Maximus- superficial muscle of hip (makes up most of butt); hip extensor that acts to bring thigh in a straight line to pelvis; most important for extending hip when power needed (like jumping); originates from sacrum and iliac bones and inserts on gluteal tuberosity of the femur and into large tendinous iliotibial tract
 - Gluteus Medius- runs from ilium to the femur beneath the gluteus maximus for most of its length; hip abductor and important in steadying pelvis during walking; in portant site for intramuscular injections; overlies the large sciatic nerve; contain superolateral quadrant of buttocks
 - Iliopsoas- fused muscle composed of two in sclee (iliacus and psoas major); from iliac bone to lower vertebrae deep inside pervis to insert on esser trochanter of the femur; prime mover of bipmexi) in; also keeps upper body from falling backward when standing erect

or press thighs together, become flabby very easily (gravity doesn't really affect them); origin on pelvis and insert on the proximal aspect of the femur

- Muscles Causing Movement at Knee Joint
 - Hamstring Group- muscle mass of posterior thigh; originate on ischial tuberosity and run down thigh to instert on both sides of tibia; prime movers of thigh extension and knee flexion; tendons can be felt at back of knee; muscles consists of
 - Biceps femoris
 - Semimembraneous
 - Semitendinous
 - Sartorius- thin, strap-like; most superficial muscle of the thigh; run obliquely across the thigh from the anterior iliac crest to the medial side of tibia; weak thigh flexor; synergist to bring about cross legged position
 - Quadriceps- anterior thigh; vastus muscles originate from femur; rectus femoris originate from pelvis; all muscles insert into tibial tuberosity via patellar ligament; group acts as a whole to extend knee power and rectus femoris helps flex hips; sometimes used as intramuscular injection sites
 - Rectus femoris

- Vastus muscles
 - Vastus lateralis