The 1st Law of Exercise Efficiency

by *Craig Wise Structural Engineer*

Muscle Effort and ***Motion Resistance*** are the 2 forces present in all muscle building exercises. Resistance is any and all of the forces that oppose (hinder) the motion. Enough resistance causes parts of the body to be overworked.

Without resistance hindering muscles, they could not be worked hard enough too heal to a stronger state. So resistance is verifiably the muscle building force of these 2 fitness forces.

Maximum resistance causes failure, which is always damaging to the body. It is not the exercise that makes your muscles stronger, healing from it does this, so the muscle can better handle that heavy load the next time.

If high resistance fails the muscle again soon after healing, it can be healed to an ever stronger state. However this process stops once the muscle becomes so strong that the joint it pulls will start failing before the muscle can again.

This is the main cause of what athletes and bodybuilders call the "Plateau".

Unlike muscles that rapidly heal even stronger, failed joints can take months to heal and no stronger because they build up scar tissue which increases the friction that wears joints out.

Bones, spines and joints get blasted in life enough, it is only our hearts and muscles that need powerful exercise. So the first universal rule of muscle building efficiency is:

Make resistance oppose only muscle contractions so it cannot cause joint or disk compressions

In more words, a perfectly efficient muscle strengthening exercise will direct all of the motion resistance force so that it only hinders the muscle contractions, leaving no resistance to be wasted by compressing joints or spinal disks.

If you could get maximum resisting forces to only hinder your muscle contractions, theoretically you could fail your muscles repeatedly, every few days forever, getting stronger and stronger without ever hitting plateaus.

Overloading joints to get at muscles is why today's mobility/cardio exercise methods eventually debilitate most people dedicated to them, and are useless for millions of disabled folks, who cannot use their legs to do heavy exercise.

Your body also tells you how efficient your exercises are:

When you are finished with your workout and your joints and spine are screaming in pain, despite popular belief, crawling away from your workout does not mean you just gave your body a wonderful gift.

Your body is screaming "pain" because you just wasted most of your resistance force compressing your joints and spinal disks, instead of opposing contractions. Efficient exercises should never cause joint or vertebra pain, only muscles later.

Force Mapping can evaluate exercise methods and devices

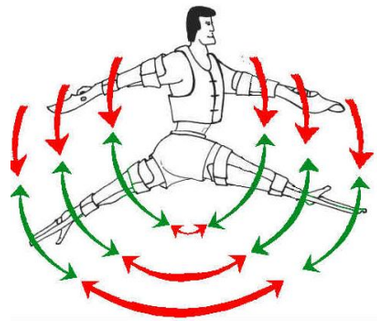
Force Mapping is something ***Structural Engineers*** have too do, they cannot build buildings just hoping they will stand. Buildings, bridges, towers and cranes apply and resist the same kind of forces that build our muscles and break our bones yet until we started studying Body Oars, *Force Mapping* had not been used to efficiently build up the human structure.

Force Mapping is the perfect science to "see" if your exercise methods direct these two forces around your joints, or if they plow right through them.

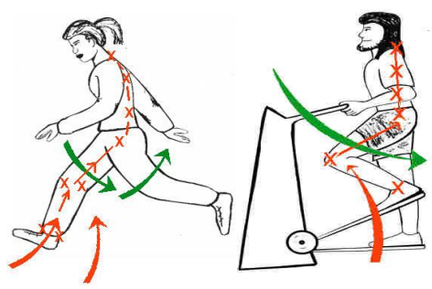
These illustrations approximate *Force Mapping* of both core muscle effort (in **green**) and direct resistance to the effort (in **red)**.

Core Muscle Effort

Motion Resistance



With LOBOS™ bionic paddle extensions, all of the resistance (drag) directly opposes the core running muscle contractions that swing the hips, in full running range, in both forward and reverse at the same time. There is no wasted motion as all returning moves are also opposed. The knees are securely braced so their condition is of little consequence. Without forces moving up and down leg bones (compressing, pain) applying massive core muscle effort becomes nearly painless.

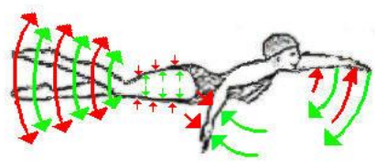


Traditional mobility/cardio strength building exercises load the resistance at the feet, driving it up into the skeleton at the ankles. It fights more gravity than effort up through the knees hips and spine. This causes most resistance to dissipate as it compresses joints and disks.

Running is important so everyone who can run should, but just enough to keep the ability strong. Overrunning and foot loading cardio methods are ultimately destructive from their constant compounding of impacts and compressions.

Manufactures of running shoes and tread mills may be missing out on fortunes keeping the assumption that all runners run for miles, when 50 yards a couple times a week could attract (and keep) far more customers running for life.

Knee loading cardio exercises that avoid impact allow the joints to devote more of their ability to oppose core muscle effort. However, almost all resistance loaded under the feet still enters the skeleton, which then causes far more joint compression than core muscle opposing.



Swimming directs most motion resistance to hinder muscles, the small muscles of the outer extremities; almost no core muscle opposing or range. So swimming does very little for building up core mobility muscle.

Swimming is a form of transportation so it is meant to avoid resistance, not fight it. It does not oppose the large muscle. However with far less joint compression swimming is far less damaging than other traditional cardio exercises.

Swimming can be rough on rotator cuffs as the shoulders rotate through all connected muscles without fully loading any.

Like all traditional cardio/mobility strengthening exercises, swimming also does not oppose the muscles of return motions. For instance when the arms rotate forward above the water, the air offers virtually no resistance.