

A4 Training System: “The science of training”

BIOMECHANICS

Biomechanics in performance training involves understanding the internal and external forces acting on a human body and the effects produced by these forces. Applying physics to motion, we can enhance an athlete’s movement and sequencing to maximize performance and prevent injuries.

Forces involved with this type of analysis and training include:

- Momentum
- Projectile Motion
- Work
- Aerodynamics
- Acceleration
- Energy
- Friction
- Force
- Impulse
- Linear and rotational motion

PROPRIOCEPTION

Proprioception is the body’s ability to react and adjust to its surroundings based on internal information...we refer to this as “intelligent movement”. We train the athlete to integrate the neuromuscular system, combining balance, strength and quickness, giving them the ability to make spur-of-the-moment decisions about what his/her capabilities are in any given situation...avoid a tackle, get past the sweeper or get to the net.

FLEXIBILITY/JOINT MOBILITY

The capacity to perform movement over a broad range is known as flexibility and is critical in competitive sports. Increased flexibility allows the athlete to perform fast movements. The success of performing such movements depends on the joint range of motion which has to be higher than that required by the movement; this is called building in a “margin of error.”

Improving flexibility and joint mobility leads to:

- Faster moves with more power
- Injury prevention
- More efficient use of energy burned for sport specific movement

CORE

The trunk has a critical role in the maintenance of stability and balance when performing movements with the arms and legs. At an elite level, upper body strength is emphasized with a concurrent development of core strength to allow efficient usage of this additional strength during performance.

Core training promotes:

- More driving force behind all movement
- A solid “foundation” for quickness and agility
- Improved body control with coordinated movements