

muscle physiology lecture 12

biomechanics

physiology & biomechanics link a lot in exercise science

the wind can have an effect as to which way a tree grows. If it always blows to the right, the tree will lean that way.

Golf stores have a way to evaluate the mechanics of your swing. (trajectories, lift, drag)

hiking poles & their effect on gait - biomechanical applications - ergonomics (keyboards)

iphones - people are often hunched forward to look at their device - kyphosis

occupational biomechanics - "lift with your legs" material handling tasks

dr. paul c. williams - spinal flexion vs. robin mckenzie - spinal extension

physiology in outer space - machines that mimic earth's gravity - tissues get

weaker in space because no force (gravity) is pulling on it.

biomechanics - study & predict falls & mechanical characteristics of how to land safely.

and how forces change & spread during impact. study every major sport and

help design the aerodynamic equipment. equipment plays a large role in

sports, for example in pole vaulting, the pole has to be the correct amount

of flexible and stiff (need to bend while storing a lot of elastic energy)

biomechanics look @ these needs & evaluate the best materials and techniques

that are needed to achieve top performance rates.

modern ski boots protect the ankle but transfer those forces to the knee, causing

more knee injuries. using more pliable boots make knee injuries less likely.

you cannot change the mechanics of impact absorption without consequences

knee braces change the activity of lower extremity muscles by making less work

for the knee but more for the hip. wearing casts can affect your gait even

after it is off because of specificity of adaptation.

statics - study of systems with motions that are constant

dynamics - study of systems that involve acceleration

kinetics - causes of a motion

kinematics - the motions themselves

understand what muscles do based on origin & insertion. agonist, antagonist, synergist

torque - moment of force.