

muscle physiology lecture 20

review

what is fitness? is your physiology capable of tolerating your environment's stressors?

fitness changes - back in the day - hunting, surviving famines, etc.

different for different sports, for example a sumo wrestler vs. an ice skater

daniel lieberman - persistence hunting

foot engagement w/ the environment, minimalist vs. maximalist shoes. shoes

are not the answer on themselves, consider stresses & loads on the tissues

pronation can put your feet at risk of injury since the foot is rolling inwards.

need to apply stress to tissues gradually, specificity of adaptation

two joints (ankle joint complex) - talocrural (superior), subtalar (inferior)

talocrural joint - hinge joint that allows plantar flexion & dorsiflexion

subtalar joint - gyroscope, facilitates ability to walk on varied terrain.

since we walk on mostly flat surfaces, our talocrural joint is probably

okay, but our subtalar joint is not getting worked, which means that

its function is probably poorer than it could and should be normally.

we mainly study the ankle joint complex on unchanging and unchallenging

terrain, such as a treadmill. only appropriate & inappropriate shoes.

domains of biomechanics: sports equipment, mimic earth's gravity in space, etc.

if you cast something, you alter both loading & muscle recruitment characteristics.

anatomy - study of components that make up the musculoskeletal "machine"

biomechanics - mechanisms (mechanical laws) used by those components to

create movement in any living thing (people, trees, animals, etc.)

statics - study of systems with motions that are constant (no change in velocity)

dynamics - study of systems that involve acceleration.

kinetics - causes of a motion, the internal & external forces associated w/ that movement.

kinematics - the motions themselves. don't consider what is causing that motion,

just look @ the patterns of a biological thing moving around.