

muscle physiology lecture 25

anabolic steroids

"they don't do anything" - androgen abuse by athletes - effects of androgen are purely psychological, athletes believed it enhances strength, but there is no clear evidence that they improve athletic ability, even after 30 years.

jean wilson believes testosterone only elicits modest effects. "no firm conclusion" it is hard to get IRB to approve a study that injects athletes with testosterone (a lot of it), so they do smaller doses, but those are not a "therapeutic dose" animal models: myosatellite cells: multipotent progenitor cells that can donate myonuclei to skeletal muscle fibers. how does testosterone work?

physiological level: change the expression of your genes. increase myonuclei.

muscle cells are large, so they have large biological domains that need to be governed. multiple nuclei are needed to govern the entire expanse of a

muscle cell because one is not enough. for large cells to grow, they need more nuclei - androgens increase the number of myonuclei and the possibility of protein accretion through a larger domain. have to bind to androgen receptors otherwise the body finds ways to dispose of it. without the activation of the motor unit, there is no adaptation, just disposal.

androgens are a set of chemicals that can produce great effects and side effects - can be abused, people who take them not always know what they are doing - debate: should it be banned in sports? if you were concerned with the athletes health, then anything

with comparably adverse effects should be banned - peeps, coke, etc. acetaminophen - leading cause of acute liver failure in the USA.

26 thousand hospitalizations, 56 thousand emergency visits, and 458 deaths related to acetaminophen every year. liver is what

controls lipid levels - dosage of oral anabolic steroids can affect

oral steroids - portal circulation, IM steroids - systemic circulation