## Ergogenic Aids (Performance Enhancers?) & Athletics:
### Creatine, Andro & Steroids
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<table>
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| **Creatine**  | *increases lean muscle mass & muscle cell hydration  
*increases muscle strength  
*speeds muscle recovery  
*improves endurance by reducing lactic acid buildup  
*improves performance  
Increases available muscle energy stores (phosphate)  
Improves high-intensity, short duration exercise capacity but not endurance or stamina | *water retention/weight gain (modest for most)  
*muscle cramps, abdominal pain, nausea, & dizziness (mild for some)  
*kidney & liver damage? (few case reports)  
*contaminants  
*Enhanced muscle functioning during repeated brief intense physical activity like sprinting or lifting | *readily available legal, & cheap  
*minimal benefits in most sports beyond a good fitness routine  
*minimal short-term risks for most athletes  
*possible kidney damage reported in wrestlers cutting significant weight |
| **Andro/DHEA**| *increases testosterone  
*increases muscle mass  
*increases strength  
*increase exercise capacity  
*increases sense of well being & sexual function  
*no effect on testosterone levels  
*no effect on lean body mass or strength | *decreases good cholesterol levels  
*increases female hormone levels  
*unreliable dosage levels & contaminants  
*no proven benefits for athletic performance | *available, cheap, legal, banned by some sports (nfl, ncaa, ioc & mlb)  
*no proven benefits beyond a good fitness routine  
*minimal risks for most users (low dose) |
| **Anabolic Steroids** | *rapid muscle growth  
*improved strength  
*enhanced exercise performance  
*increased intensity & aggressiveness  
*increase sexual potency  
*positive effect on skeletal muscle size with resistance training  
*limits muscle breakdown with intense exercise  
*changes mood/mental state  
*enhanced sex drive  
*increased blood pressure, elevated liver enzymes, addiction, muscle tendon tears, baldness, lowers good cholesterol, reduced height, breast development, testicular shrinkage, depression, hostility, paranoia, contaminants, HIV/hepatitis with needle use, cancers?  
*minimal at prescription or low dosages  
*moderate at super dosages | *illegal, banned in all sports, expensive, restricted availability  
*most risks are reversible when use is discontinued  
*counterfeit products with poor quality control are common  
*claims often match actual benefits |