



Tips From the Training Room

For more information contact the athletic training staff at Towson Sports Medicine, 410-828-4TSM (4876).

Anabolic Steroids

Anabolic steroids are popular in some athletes participating in sports requiring strength, power, speed, and endurance. In fact, twenty-five percent of adult anabolic steroid users started as teenagers. Anabolic steroids are also used in non-athletes to improve physique and gain weight.

Today, anabolic steroids can be found in many different forms including powders and pills that are taken orally, gels or creams that are absorbed through the skin, and liquids for injection into muscle with needles. All of these forms exist despite steroids being illegal and banned by many major sports organization, such as the IOC, NCAA, NFL, NBA, MLB, etc.

Androstenedione

Background Information

- Produced in small quantities by the adrenal glands, ovaries and testes
- Naturally found in some plants
- Gained popularity in 1998 when Mark McGuire used it during his MLB season, however, it has been around since the 1930's

Function

- It is considered a natural alternative to steroids because as a prohormone to testosterone, super supplementation may increase testosterone level

Proposed effects on the body

- Possible increases in testosterone
- Increase muscle strength
- Build muscle mass
- Improves performance

Research Evidence

- Increases muscle strength and mass, only at high doses taken frequently
- Not proven to improve performance
- Does not increase endurance

Potential side effects

Males:

- Develop breasts
- Get painful erections
- Testicles shrink
- Become impotent

Females:

- Grow excessive face and body hair
- Voice deepens
- Menstrual irregularities
- Reduction in breast size

Both males and females may:

- Get acne
- Have oily scalp and skin
- Yellowing of skin
- Become bald
- Retain excessive fluid
- Growth may become stunted
- Suffer heart attacks and strokes
- Develop serious risk of liver disease and cancers
- Fly into rages and experience an increase in other aggressive behavior
- Suffer delusions

Organizations banning this substance

- Banned by FDA
- Banned by major sports organizations, such as IOC, NCAA, NFL, USOC

Non-Anabolic Steroid Performance Enhancing Supplements

Performance-enhancing substances are substances taken in abnormal quantity or route for the sole purpose of increasing performance beyond the effects of training. These substances may be prescription medications, illegal drugs, over the counter medications or dietary supplements. The legality of these substances depends on the level of competition and the sport performed.

Creatine

Background Information

- Amino acid naturally produced by the liver, kidneys and pancreas and is stored in muscle tissue.
- Also found in food, such as fish and red meat

- Creatine usage significantly increased after the 1992 Olympics in Barcelona when it was discovered that many Olympians had used it to help improve their performance
- Frequently used by people involved in sports requiring power, such as football

Function

- Used by the body to help make Adenosine Triphosphate (ATP), a form of energy utilized in sprinting or anaerobic activities

Proposed effects on the body

- Prolong onset of fatigue after exercise
- Promotes weight gain

Research Evidence

- Increase work capacity with short, repetitive exercise, or anaerobic activity
- Increase in weight gain (mainly water)
- Does not increase strength or build muscle
- Does not improve endurance

Potential Side Effects

- Water retention resulting in weight gain at initiation of supplement
- Anecdotal muscle & stomach cramping
- Dehydration
- Possibility of developing reversible kidney issues
- Potential increased risk of compartment syndrome

Warnings

- Very few studies have evaluated the short and long-term effects of creatine usage in people less than 18 years old
- American Academy of Sports Medicine suggests that people younger than 18 years old should not be using creatine
- "Creatine can be viewed as a "gateway substance" that may prompt a young athlete to consider other ergogenic aids, such as anabolic steroids." (Laos & Metz)

Organizations banning this substance

- No bans in place

Dehydroepiandrosterone (DHEA)

Background Information

- Formally known as dehydroepiandrosterone
- Naturally produced and secreted by the adrenal glands and gonads
- Very similar to androstenedione and anabolic steroids
- DHEA production decreases with age

Function

- Used by the body to help increase the amount of testosterone in the body

Proposed Effects on the Body

- Increase muscle mass and strength when high doses are used
- Improve performance
- Not proven to build muscle mass
- Not proven to increase muscle strength, only at high doses taken frequently
- Not proven to improve performance

Risk Factors

- Testicular shrinkage
- Male pattern baldness
- Stretch marks
- Irreversible development of breasts in men
- Acne
- Irreversible acquisition of male characteristics in women
- Decrease in strength of tendons
- Possibility of addiction
- Increased estrogen effect, which can increase the risk of developing CVD, breast cancer and pancreatic cancer
- Possibility of increasing hormone-sensitive malignancies
- May lead to adverse ratio of total cholesterol to high-density lipoprotein
- May result in stunted growth in athletes who have completed growing yet
- May cause positive results with drug testing

Organizations Banning this Substance

- Banned by major sports organizations, such as IOC, NCAA, NFL

Ephedrine

Background Information

- A stimulant found in the herbal forms of ephedra and Ma Huang
- Used in the production of methamphetamine in illegal drug labs
- Usually combined with caffeine in weight loss products
- Hundreds of unfavorable reactions, including death, have been reported to the FDA after using products containing ephedrine

Function

- Increase in heat production and resting metabolic rate, which helps with caloric expenditure and results in weight loss
- Delays fatigue
- Believed to cause an increase in stimulation of the central nervous system

Proposed Effects

- Burns fat
- Delays fatigue in workouts
- Is a stimulant

Research Evidence

- Works as stimulant

Potential Side Effects

- Jittery
- Sweating
- Weight loss
- Increased heart rate
- Increased blood pressure
- Heart Attack
- Stroke
- Seizure
- Arrhythmias
- Psychiatric problems

Organizations banning this substance

- Banned by major sports organizations
- Banned by FDA in 2004

Protein Supplements

Background Information

- One of the more commonly used supplements in athletes
- Most US Citizens take in more than the required daily amount of protein
- RDA protein general population is 0.8 mg/kg/day
- RDA for an athlete is 1.2-1.4 mg/kg/day (endurance) and 1.2-1.7 mg/kg/day (resistance training)
- Typically available in powder and liquid forms
- Best source of protein supplementation is food-based protein

Proposed effects on the body

- Weight gain
- Increases in strength, power & lean muscle

Research Evidence

- Not proven to build muscle strength or mass
- Weight gain is variable

Risk Factors

- Kidney problems when taken in high amounts

- Not proven to increase strength or lean muscle

Organizations banning this substance

- No bans in place

Alternatives for Healthy Performances

Fluids:

- Fluid needs= body weight x .67 for the number of ounces you require daily- this does not include fluid needed for exercise.
- Night before activity- need to drink 16 ounces of water
- Morning of activity- consume 16 ounces of water as soon as you get up. If practice is later in the day, need to drink 16 ounces two hours before practice.
- Pre-exercise- need to consume 6-8 ounces of water, or sports drink 15 minutes before exercise
 - Avoid carbonated beverages or caffeine.
 - Should avoid fruit juices before exercise, this can cause loose stool and gas.
- During exercise- 4-8 ounces every 15 minutes- water and sports drinks- alternating between the two (sports drinks only required in exercise greater than 2 hours duration)
- Post exercise- 16 ounces of fluid for every pound lost, within two hours after exercise
 - Some options: water, sports drinks, lemonade, and fruit punch
 - Avoid: carbonated beverages, alcohol and caffeine (including energy drinks)

Options for Potassium and Sodium replacement after exercise:

- Orange juice and salted pretzels
- Baked potato with ketchup or salt
- Nectarine and Chex mix
- Mix of dried apricots and salted nuts

Frequency of meals:

- Meals should be small and more frequent
- They need to give you consistent energy and digest more quickly to provide available fuel for your body

- Eat 5 or more meals per day every three to four hours.

Carbohydrates:

Intense training depletes carbohydrates stores resulting in poor performance and increased fatigue.

Carbohydrates: 60-65% of diet should consists of carbohydrates

Sources:

- Bread
- Bagels
- English muffins
- Pita
- Pasta
- Cereals
- Pretzels
- Fruit juices
- Popcorn
- Vegetables
- Sports drinks
- Cereal bars

Carbohydrates need to be consumed before, during, and after workouts.

Meals should be 2/3 carbs and 1/3 protein

Carbohydrates should be consumed within 15 minutes after workouts or events:

- Poptarts
- Cereal bars
- Crackers
- Pretzels
- Dry cereal
- Bagels
- Graham crackers
- Chex mix
- Fruit drinks
- Frozen yogurt and fruit ice.

Pre- exercise carbohydrates depend on your body size and the amount of time before competition.

- 4 hours before competition for a 60kg athlete, can consume 3 cups of pasta, 1 cup of sauce, 1 dinner roll, and 16 ounces of juice.

- 1 hour before competition for a 60 kg athlete, can consume 2 cups of cereal, 8 ounces of skim milk

- 10 minutes before competition for a 60 kg athlete, can consume a small plain bagel.

After exercise you should consume 1.5 g/kg of carbohydrates and 0.5 g/kg of protein in the first 15 minutes and then again the same amount in two hours.

Here are an example:

- Drinking milk, eating a banana, cereal, and a plain sandwich with 2 ounces of meat

Protein:

Body can not use more than one gram of protein per pound of body weight

Sources:

- Chicken
- Fish
- Beef
- Pork
- Veal
- Turkey
- Eggs
- Cheese
- Milk
- Shellfish
- Soy burgers
- Dried beans and nuts

Fat:

Too much causes cramps

You may fatigue more quickly from a lack of fat

Try to limit high fat foods before and during exercise

Foods to limit before and during exercise:

- Chips
- French fries
- Pizza
- Burgers
- Ice cream
- Doughnuts
- Chocolate
- Nuts
- Fried meats
- Bologna
- Salami

- Pepperoni.

Pre-event or workout meals:

- 3 hours before- pasta, stir-fry, sandwiches, fajitas, eggs and toast, chicken, potato and vegetables, and veggie burger.

- 2-3 before- bagels, crackers, pretzels, smoothies, cereal and milk, waffles/pancakes, and pasta salad.

- 1-2 hours before- cereal bar, pretzels, fruit drink, toast, instant breakfast, and nutritional shake.

- Evening Snacking:

Soft pretzels, cereal, crackers, popcorn, bagels, cereal bars, trail mix, frozen yogurt, pudding, fruit, and fruit ice.

Weight and Strength Gain:

Want to add one pound per week- by adding 10-14 extra grams of protein per day through your diet.

Increase number of meals not the size of the meals

Need to be consistent with diet and exercise to see gains

Do not rely on weight gainer or high protein powders. These will fill you up before you get all the calories your body needs.

Resources:

Guidelines for Pediatricians: Performance-Enhancing Substance

http://www.aap.org/sections/sportsmedicine/PDFs/SportsShorts_12.pdf

National Collegiate Athletic Association

www.ncaa.org

National Center for Drug-Free Sport

www.drugfreesport.com

Powered by Me

<http://www.poweredbymemd.com>

