

CERTIFIED MEN'S HEALTH COUNSELOR ONLINE COURSE: SESSION 3

• ATHLETIC SAFETY

Performance-Enhancing Drugs: Know the Risks

Most serious athletes will tell you that the competitive drive to win can be fierce. Besides the satisfaction of personal accomplishment, athletes often pursue dreams of winning a medal for their country or securing a spot on a professional team. In such an environment, the use of performance-enhancing drugs has become increasingly common.

But using performance-enhancing drugs — aka, doping — isn't without risks.

Anabolic Steroids - What are they?

Some athletes take a form of steroids — known as anabolic-androgen steroids or just anabolic steroids — to increase their muscle mass and strength. The main anabolic steroid hormone produced by your body is testosterone.

Testosterone has two main effects on your body:

- Anabolic effects promote muscle building.
- Androgenic effects are responsible for male traits, such as facial hair and a deeper voice.



Some athletes take straight testosterone to boost their performance.

Frequently, the anabolic steroids that athletes use are synthetic modifications of testosterone. These hormones have approved medical uses, though improving athletic performance is not one of them. They can be taken as pills, injections or topical treatments.

Why are these drugs so appealing to athletes? Besides making muscles bigger, anabolic steroids may help athletes recover from a hard workout more quickly by reducing the muscle damage that occurs during the session. This enables athletes to workout harder and more frequently without overtraining. In addition, some athletes may like the aggressive feelings they get when they take the drugs.

Designer Steroids

A particularly dangerous class of anabolic steroids are the so-called "designer" drugs — synthetic steroids that have been illicitly created to be undetectable by current drug tests. They are made specifically for athletes and have no approved medical use. Because of this, they haven't been tested or approved by the Food and Drug Administration (FDA) and represent a particular health threat to athletes.



Risks

Many athletes take anabolic steroids at doses that are much higher than those prescribed for medical reasons, and most of what is known about the drugs' effects on athletes comes from observing users. It is impossible for researchers to design studies that would accurately test the effects of large doses of steroids on athletes, because giving participants such high doses would be unethical. This means that the effects of taking anabolic steroids at very high doses haven't been well studied.

Anabolic steroids come with serious physical side effects as well.

Men may develop:

- Prominent breasts
- Baldness
- Shrunken testicles
- Infertility

Women may develop:

- A deeper voice
- An enlarged clitoris
- Increased body hair
- Baldness

Both men and women might experience:

- Severe acne
- Increased risk of tendinitis and tendon rupture
- Liver abnormalities and tumors
- Increased low-density lipoprotein (LDL) cholesterol (the "bad" cholesterol)
- Decreased high-density lipoprotein (HDL) cholesterol (the "good" cholesterol)
- Hypertension
- Heart and circulatory problems
- Suppression of the hypothalamic-pituitary-gonadal axis
- Prostate gland enlargement
- Aggressive behaviors, rage or violence
- Psychiatric disorders, such as depression
- Drug dependence
- Infections or diseases such as HIV or hepatitis if you're injecting the drugs
- Inhibited growth and development, and risk of future health problems in teenagers

Taking anabolic-androgenic steroids to enhance athletic performance, besides being prohibited by most sports organizations, is illegal. In the past 20 years, more effective law enforcement in the United States has pushed much of the illegal steroid industry into the black market. This poses additional health risks because the drugs are either made in other countries and smuggled in or made in clandestine labs in the United States. Either way, they aren't subject to government safety standards and could be impure or mislabeled.

Androstenedione - What is it?

Androstenedione (andro) is a hormone produced by the adrenal glands, ovaries and testes. It's a hormone that's normally converted to testosterone and estradiol in both men and women.

Andro is available in prescription and nonprescription forms. The prescription version is a controlled substance. Andro is also sold without a prescription as a nutritional supplement. Manufacturers and bodybuilding magazines tout its ability to allow athletes to train harder and recover more quickly. However, its use as a performance-enhancing drug is illegal in the United States.



Scientific studies that refute these claims show that supplemental androstenedione doesn't increase testosterone and that your muscles don't get stronger with andro use. In fact, almost all of the andro is rapidly converted to estrogen, the primary hormone in females.

Risks

Side effects of andro in men include:

- Acne
- Diminished sperm production
- Shrinking of the testicles
- Enlargement of the breasts

In women, side effects include:

- Acne
- Masculinization, such as deepening of the voice and male-pattern baldness

In both men and women, andro can decrease HDL cholesterol (the "good" cholesterol), which puts you at greater risk of heart attack and stroke.

Human Growth Hormone - What is it?

Human growth hormone, also known as gonadotropin, is a hormone that has an anabolic effect. Athletes take it to improve muscle mass and performance. However, it hasn't been shown conclusively to improve either strength or endurance. It is available only by prescription and is administered by injection.



Risks

Adverse effects related to human growth hormone range in severity and may include:

- Joint pain
- Muscle weakness
- Fluid retention
- Carpal tunnel syndrome
- Impaired glucose regulation
- Cardiomyopathy
- Hyperlipidemia

Erythropoietin - What is it?

Erythropoietin is a type of hormone used to treat anemia in people with severe kidney disease.



It increases production of red blood cells and hemoglobin, resulting in improved movement of oxygen to the muscles. Epoetin, a synthetic form of erythropoietin, is commonly used by endurance athletes.

Risks

Erythropoietin use among competitive cyclists was common in the 1990s and allegedly contributed to at least 18 deaths. Inappropriate use of erythropoietin may increase the risk of thrombotic events, such as stroke, heart attack and pulmonary edema.

Diuretics - What are they?

Diuretics are drugs that change your body's natural balance of fluids and salts (electrolytes) and can lead to dehydration. This loss of water can decrease an athlete's weight, helping him or her to compete in a lighter weight class, which many athletes prefer. Diuretics may also help athletes pass drug tests by diluting their urine and are sometimes referred to as a "masking" agent.



Risks

Diuretics taken at any dose, even medically recommended doses, predispose athletes to adverse effects such as:

- Dehydration
- Muscle cramps
- Exhaustion
- Dizziness
- Potassium deficiency
- Heart arrhythmias
- Drop in blood pressure
- Heatstroke
- Death

Creatine - What is it?

Many athletes take nutritional supplements instead of or in addition to performance-enhancing drugs. Supplements are available over-the-counter as powders or pills.



The most popular supplement among athletes is probably creatine monohydrate. Creatine is a naturally occurring compound produced by your body that helps your muscles release energy.

Scientific research indicates that creatine may have some athletic benefit by producing small gains in short-term bursts of power. Creatine appears to help muscles make more adenosine triphosphate (ATP), which stores and transports energy in cells, and is used for quick bursts of activity, such as weightlifting or sprinting. There's no evidence, however, that creatine enhances performance in aerobic or endurance sports.

Your liver produces about 0.07 ounces (2 grams) of creatine each day. You also get creatine from the meat in your diet. Creatine is stored in your muscles, and levels are relatively easily maintained. Because your kidneys remove excess creatine, the value of supplements to someone who already has adequate muscle creatine content is questionable.

Risks

Supplements are considered food and not drugs by the FDA. This means supplement manufacturers are not required to conform to the same standards as drug manufacturers do. In some cases, supplements have been found to be contaminated with other substances, which may inadvertently lead to a positive test for performance-enhancing drugs.

Possible side effects of creatine that can decrease athletic performance include:

- Stomach cramps
- Muscle cramps
- Nausea
- Diarrhea
- Weight gain

Weight gain is sought after by athletes who want to increase their size. But with prolonged creatine use, weight gain is more likely the result of water retention than an increase in muscle mass. Water is drawn into your muscle tissue, away from other parts of your body. This puts you at risk of dehydration.

High-dose creatine use may potentially damage your:

- Kidneys
- Liver

It appears safe for adults to use creatine at the doses recommended by manufacturers. But it's unknown what kind of effect taking creatine has over the long term, especially in teens and children.

Stimulants - What are they?

Some athletes use stimulants to stimulate the central nervous system and increase heart rate and blood pressure.

Stimulants can:

- Improve endurance
- Reduce fatigue
- Suppress appetite
- Increase alertness and aggressiveness



Common stimulants include caffeine and amphetamines. Cold remedies often contain the stimulants ephedrine or pseudoephedrine hydrochloride. The street drugs cocaine and methamphetamine also are stimulants.

Risks

Although stimulants can boost physical performance and promote aggressiveness on the field, they have side effects that can impair athletic performance.

- Nervousness and irritability make it hard to concentrate on the game.
- Insomnia can prevent an athlete from getting needed sleep.
- Dehydration
- Heatstroke
- Athletes may become psychologically addicted or develop a tolerance so that they need greater amounts to achieve the desired effect, meaning they'll take doses that are much higher than the intended medical dose.

Other side effects include:

- Heart palpitations
- Heart rhythm abnormalities
- Weight loss
- Tremors
- Mild hypertension

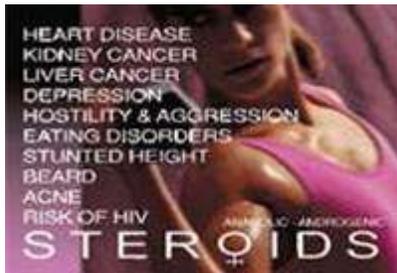
- Hallucinations
- Convulsions
- Stroke
- Heart attack and other circulatory problems

The Bottom Line

Do performance-enhancing drugs boost performance? Some athletes may appear to achieve physical gains from such drugs, but at what cost? The long-term effects of performance-enhancing drugs haven't been rigorously studied. And short-term benefits are tempered by many risks. Not to mention that doping is prohibited by most sports organizations. No matter how you look at it, using performance-enhancing drugs is risky business.

'Natural' Steroids: Are they Safe?

Is it safe to take the natural steroids sold at health food stores?



So-called "natural" steroids, which are sold as over-the-counter supplements at many health food stores, aren't safe. Because natural steroids contain "natural" substances that aren't chemically altered, they can be marketed as dietary supplements — which are subject to limited regulation by the Food and Drug Administration. Still, they can have the same harmful effects as synthetic steroids.

Although prescription steroids have legitimate medical uses, it's important to remember that steroids of any type have significant risks. When used inappropriately, steroids can cause various long-lasting or irreversible health problems, including:

- Mood swings, aggression and violent behavior
- Acne
- Baldness
- Sexual dysfunction or infertility
- Increased low-density lipoprotein (LDL), or "bad," cholesterol
- Decreased high-density lipoprotein (HDL), or "good," cholesterol
- High blood pressure
- Liver damage

Energy Drinks: Do They Really Boost Energy?

Most energy drinks contain large amounts of caffeine, which can provide a temporary energy boost. Some energy drinks contain sugar and other substances. The boost is short-lived, however, and may be accompanied by other problems.

For example, energy drinks that contain sugar may contribute to weight gain — and too much caffeine can lead to:

- Nervousness
- Irritability
- Insomnia
- Rapid heartbeat
- Increased blood pressure



Mixing energy drinks with alcohol may be even more problematic. Energy drinks can blunt the feeling of intoxication, which may lead to heavier drinking and alcohol-related injuries.

For most people, occasional energy drinks are fine, but try to limit yourself to about 16 ounces (500 milliliters) a day. If you're consistently fatigued or rundown, however, consider a better — and healthier — way to boost your energy. Get adequate sleep, include physical activity in your daily routine, and eat a healthy diet. If these strategies don't seem to help, consult your doctor. Sometimes fatigue is a sign of an underlying medical condition, such as hypothyroidism or anemia.

There are a few groups for which energy drinks are typically not recommended. If you have an underlying condition such as heart disease or high blood pressure, ask your doctor if energy drinks may cause complications. Pregnant women and women who are breast-feeding may want to especially limit consumption of these beverages.

With the growing popularity of energy drinks, many parents have become concerned about how much caffeine their kids are getting. The American Academy of Pediatrics recommends that adolescents get no more than 100 milligrams of caffeine a day. Younger children shouldn't drink caffeinated beverages on a regular basis.

Eating and Exercise: 5 Tips to Maximize Workouts

Knowing when and what to eat can make a difference in how you feel during your workouts. Here are five tips on eating and exercise to guide you.

Eating and exercise go hand in hand. When and what you eat can be important to how you feel when you exercise, whether it's a casual workout or a serious athletic competition.

Here are five tips for eating and exercise to help maximize your exercise and athletic performance. Just keep in mind that the duration and intensity of your activity will dictate how often and what you should eat and drink. Running a marathon demands more energy in the way of food than does walking two miles — but whatever your exercise, you'll benefit from paying attention to your meals and snacks.

Eat a Healthy Breakfast

If you exercise in the morning, get up early enough to eat breakfast — that may mean one to two hours before your workout. Most of the energy you got from dinner the previous night is used up by morning, and your blood sugar may be low. If you don't eat, you may feel sluggish or lightheaded when you exercise. If you plan to exercise within an hour after breakfast, eat a lighter breakfast or drink something to raise your blood sugar, such as a sports drink. Emphasize carbohydrates for maximum energy.

Good breakfast options include:

- Whole-grain cereals or bread
- Low-fat milk
- Juice
- Bananas



If you're not a fan of eating in the morning before you work out, try a sports drink or have a bigger bedtime snack the night before. Just don't try any foods or drinks for the first time before a workout, or you risk an upset stomach.

Size Matters

Be careful not to overdo it when it comes to how much you eat before exercise. The general guideline:

- **Large meals.** Eat these at least three to four hours before exercising.
- **Small meals.** Eat these two to three hours before exercising.
- **Small snacks.** Eat these an hour before exercising.



Eating too much before you exercise can leave you feeling sluggish, or worse, with a case of diarrhea or stomach cramps. Eating too little may not give you the energy to keep you feeling strong throughout your workout.

Snack Well

Most people can eat small snacks right before and during exercise. The key is how you feel. Do what works best for you. Snacks eaten soon before exercise probably won't give you added energy, but they can help keep up your blood sugar and prevent distracting hunger pangs.



Good snack options include:

- Energy bars or drinks
- Bananas or other fresh fruit
- Yogurt
- Fruit smoothies
- Whole-grain bagel or crackers with peanut butter
- Granola bars

A healthy snack is especially important if you plan a workout several hours after a meal.

Carbohydrate-Loading Diet

A carbohydrate-loading diet, also called a carb-loading diet, is a strategy to increase the amount of fuel stored in your muscles to improve athletic performance. Carbohydrate loading generally involves greatly increasing the amount of carbohydrates you eat several days before a high-intensity endurance athletic event. You also typically scale back your activity level during carbohydrate loading.



Purpose

Any physical activity you do requires carbohydrates to provide you with fuel. For most recreational activity, your body uses its existing energy stores for fuel. But when you engage in long, intense athletic events, your body needs extra energy to keep going. The purpose of carbohydrate loading is to give you the energy to complete an endurance event with less fatigue, improving your athletic performance.

Carbohydrate loading is most beneficial if you're an endurance athlete — such as a marathon runner, swimmer or cyclist — preparing for an event that will last 90 minutes or more.

Carbohydrate loading isn't necessary for shorter athletic activities, such as recreational biking or swimming, weightlifting, and five- or 10-mile (eight- or 16-kilometer) runs.

Diet details - The Role of Carbohydrates

Carbohydrates, also known as starches and sugars, are your body's main energy source. Complex carbohydrates include legumes, grains and starchy vegetables, such as potatoes, peas and corn. Simple carbohydrates are found mainly in fruits and milk, as well as in foods made with sugar, such as candy and other sweets.



During digestion, your body converts carbohydrates into sugar. The sugar enters your bloodstream, where it's then transferred to individual cells to provide energy. Some of the extra sugar is stored in your liver and muscles as glycogen — your energy source.

Increase Your Energy Storage

Your muscles normally store only small amounts of glycogen — enough to support you during recreational exercise activities. If you exercise intensely for more than 90 minutes, your muscles may run out of glycogen. At that point, you may start to become fatigued, and your performance may suffer.

But with carbohydrate loading, you may be able to store up enough energy in your muscles to give you the stamina to make it through longer endurance events without overwhelming fatigue — although you still will need to consume some energy sources during your event.

Two Steps to Carbohydrate Loading

Traditionally, carbohydrate loading is done in two steps the week before a high-endurance activity:

- **Step 1.** About a week before the event, adjust your carbohydrate intake, if needed, so that it's about 50 to 55 percent of your total calories. Increase protein and fat intake to compensate for any decrease in carbohydrates. Continue training at your normal level. This helps deplete your carbohydrate stores and make room for the loading that comes next.
- **Step 2.** Three to four days before the event, increase your carbohydrate intake to about 70 percent of your daily calories. Smaller athletes should consume about 4.5 grams of carbs per pound (kilogram) of body weight, while larger athletes should consume about 3.5 grams per pound of body weight to get adequate carbohydrate intake. Cut back on foods higher in fat to compensate for the extra carbohydrate-rich foods. Also scale back your training to avoid using the energy you're trying to store up. Rest completely the day before your big event.



Sample Carbohydrate-Loading Meal Plan

Here's a sample carbohydrate-loading meal plan for an athlete who weighs 170 pounds (77 kilograms). Based on 4 grams of carbohydrates per pound of body weight, the meal plan consists of about 70 percent carbohydrates. You can tweak this sample carbohydrate-loading meal plan to suit your own tastes and nutritional needs. Keep in mind that 1 gram of carbohydrates has 4 calories.

Sample carbohydrate-loading meal plan		
Item (amount)	Carbohydrates (grams)	Total calories
Breakfast		
Milk, fat-free (12 ounces)	18	125
1 oat bagel (4 1/2-inch diameter)	70	334
Peanut butter (1 tablespoon)	3	94
Honey (1 tablespoon)	17	64
Morning snack		
2 fig bars (3-inch bars)	40	198
Grape juice, unsweetened (8 ounces mixed with 4 ounces water)	37	152
Raisins (1 1/2 ounces)	34	129
Lunch		
Milk, fat-free (8 ounces)	12	83
4 slices whole-wheat bread (1 1/2 ounces per slice)	95	512
Chicken breast, roasted without skin (4 ounces or 1/2 breast)	0	142
Romaine lettuce, shredded (1/4 cup)	1	2
4 thin tomato slices	2	44
Mayonnaise-type salad dressing (2 tablespoons)	7	76
Tortilla chips, low-fat, baked (1 ounce)	23	118
12 baby carrots	10	48
Afternoon snack		
Low-fat fruit yogurt (8 ounces)	47	250
10 wheat crackers	13.5	91
1 medium apple	25	95
Cranberry juice (12 ounces)	46	174
Dinner		
Salmon, baked (3 ounces)	0	155
Brown rice (1 1/2 cups)	69	328
Broccoli, steamed (1 cup)	11	55
Milk, fat-free (12 ounces)	18	125
Lettuce salad (1 1/4 cups) with 5 cherry tomatoes and 1/4 cup shredded carrots	7	33
Reduced fat Italian salad dressing (2 tablespoons)	1	22
Walnuts (1/4 cup)	4	196

Wheat dinner roll (1 ounce)	13	76
Evening snack		
Strawberry slices (1/2 cup)	6	27
Frozen yogurt, fat-free chocolate (1 1/2 cups)	55	299
Total	684.5	4,047

Results

Carbohydrate loading may give you more energy during an endurance event. You may feel less fatigued and see an improvement in your performance after carbohydrate loading. But carbohydrate loading isn't effective for everyone. Other factors can influence your athletic performance or interfere with the effectiveness of your carbohydrate-loading strategy, including your fitness level and the intensity level of your exercise. Even with carbohydrate loading, you still may feel muscle fatigue. You may not perform as well as you'd hoped, or you may even have to drop out of your event before finishing it.



If you're a man, a carbohydrate-loading diet can increase the levels of glycogen stored in your muscles from 25 to 100 percent of your normal amount. However, carbohydrate loading may not be as effective if you're a woman. Fewer research studies exist about carbohydrate loading in women, and they've yielded mixed results. A woman may need to consume more calories than usual during carbohydrate loading to get the same benefits as a man does. A woman's menstrual cycle also may affect the effectiveness of carbohydrate loading for reasons not yet clear.

Even if you've practiced carbohydrate loading, you still need to replenish your body's energy during the event to maintain your blood sugar levels. You can do this by periodically consuming sports drinks, gels or bars, fruit, or even a candy bar during your event at the rate of 30 to 60 grams an hour. And don't forget to eat carbohydrate-rich foods after your endurance event, too, to replenish your glycogen stores.

Risks

Carbohydrate loading isn't right for every endurance athlete. It's a good idea to consult your doctor or a registered dietitian before you start carbohydrate loading, especially if you have diabetes. You may also need to experiment with different amounts of carbohydrates to find something that works best for your situation.

A carbohydrate-loading diet can cause some discomfort or side effects, such as:

- **Weight gain.** Much of this weight is extra water, but if it hampers your performance, you're probably better off skipping the extra carbs.
- **Digestive discomfort.** You may need to avoid or limit some high-fiber foods one or two days before your event. Beans, bran and broccoli can cause gassy cramps, bloating and loose stools when you're loading up on carbohydrates.
- **Blood sugar changes.** Carbohydrate loading can affect your blood sugar levels. Monitor your blood sugar during training or practices to see what works best for you. And talk to your dietitian or doctor to make sure your meal plan is a safe one for your situation.

Milk Joins the Roster of Sports Drinks

Low-fat milk is taking on sports drinks and coming out on top.



Several small studies have put low-fat milk and low-fat chocolate milk to the test as an alternative exercise recovery beverage for athletes performing resistance and endurance activities.

Athletes need fuel — for both immediate and stored energy. The body's preferred source of fuel is carbohydrate (sugar), which is stored as glycogen in the muscles. Protein is needed to build muscles and repair them after use.

Milk offers both carbohydrate (lactose) and protein (whey and casein). When compared to sports drinks, low-fat milk, plain or chocolate, was equivalent or better for fueling, repairing and building muscle. The results were especially impressive when milk was used as a recovery or post-exercise beverage.

Milk has other performance-enhancing qualities as well. Milk contains electrolytes (sodium, potassium and other minerals), which are lost through sweat and must be replenished after exercise. Milk is also rich in nutrients such as calcium, phosphorus and vitamin D.

**CERTIFIED MEN'S HEALTH COUNSELOR ONLINE COURSE - SESSION 3
QUESTION & ANSWERS**

NAME: _____

ADDRESS: _____

CITY, STATE, ZIP, PC: _____

PHONE: _____

FAX: _____

E-MAIL: _____

Please be sure to fill out the information above, complete the test and e-mail or mail it back to us at iridology@netzero.net or P.O. Box 485, Weimar, CA, 95736-0485. We will grade your question & answer session and will let you know if we have any questions or concerns. **Please use a separate sheet to do this assignment.**

1. What are the two main effects Testosterone has on your body?
2. Taking anabolic-androgenic steroids is legal. T/F
3. What is Androstenedione and how does it affect the body?
4. Why would anyone want to take gonadotropin?
5. What is the difference between prescription and herbal diuretics?
6. What is a stimulant and how does it affect the body?
7. Too much caffeine can lead to:
8. What are the risks of Erythropoietin?
9. What are the side effects of Androstenedione in men?
10. Are "natural" steroids safe?
11. What is carbohydrate loading?
12. What are carbohydrates?
13. How long should you wait to exercise after eating a large meal?
14. Sexual dysfunction is not a health problem caused by steroids. T/F
15. All men and women should eat a carbohydrate-loading diet all the time. T/F