Anti-Doping Awareness in Sports

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Lecture -37

Supplement Issues

Good morning, ladies and gentlemen. Welcome back to week eight of this course on anti-doping awareness for sports. Today in lecture two, we will talk about the supplements and its issues. There are a lot of issues regarding sports supplements, and we will talk about all of them. I'll be covering this topic as per the following outline: Introduction, health risks, contaminated supplements, misuse, ethical/legal concerns, dependency, the economics of supplements, certain myths we'll try and either accept or debunk, and we will conclude with a take-home message.

Sports supplements are widely used for performance enhancement, recovery, and health. However, their use can raise health, legal, and ethical concerns. If used properly, sports performance can improve, recovery after training or competition will improve, and the athlete's health is preserved. However, if not used properly, there are a lot of concerns which can be raised.

There are certain health risks of sports supplements which you should be aware of. Overdose and toxicity, especially with certain vitamins which are fat-soluble and certain minerals like iron, can lead to toxicity. Contamination: there is a big market for supplements, and unregulated supplements can contain harmful or banned substances.

There may also be an issue of fake and spurious supplements, which may also contain harmful or banned substances. Because if anything is found, the athlete is held responsible. So you cannot blame the supplement later, because ultimately, the athlete is supposed to be responsible for whatever enters his or her body. Side effects: stimulants like caffeine can cause heart issues, insomnia, or anxiety.

There are other supplements which may affect the kidneys. There are supplements which may affect the liver. And there are supplements which may affect the blood. Now, normal

use of these supplements will not, but overuse will definitely affect all these systems in the body. There is a big risk of contaminated supplements because the market for supplements is unregulated, and that is why the risk of contamination is very high.

Banned substances: athletes may unknowingly consume banned substances leading to sanctions, because several times the supplements may contain substances which are not present on the label, and supplement companies may not disclose all the ingredients, thereby putting the athletes at risk. Ultimately, it is the athlete's duty to be careful about what enters his body. Misuse of supplements: athletes may use supplements as a substitute for proper nutrition, leading to imbalanced diets. We always recommend natural food first and supplementation later.

But in some cases, athletes may get hooked on supplements, and they may neglect their natural diet. Unsupervised use: using supplements without professional guidance can result in improper dosage or health risks. It's a very, very risky business, and a supplement should always be prescribed.

Youth athletes: There is a large percentage of youth athletes who are misusing supplements thinking that they will get a quick performance boost. It is not to be encouraged, and youth athletes should be monitored much more strictly than adult athletes as far as supplementation goes. There are some ethical and legal concerns while using supplements. Number one is doping, because some supplements may contain banned substances leading to doping violations.

Fair play: they say overuse of supplements can challenge the integrity of fair competition. Yes, quite possible. More importantly, the higher quality supplements can only be afforded by a minuscule percentage of athletes, and most of the athletes cannot afford them. So that is why they say using supplements may violate the spirit of fair play.

Legal risks: ultimately, athletes are responsible for everything they consume, even unknowingly. So you cannot get away by saying that it was present in this supplement or that athlete support personnel gave it to them. Ultimately, if you are an athlete, you are responsible for whatever enters your body and whatever is found in your blood or urine sample. Psychological dependence: athletes may develop a psychological reliance on supplements for performance.

It is very commonly seen and it should not be encouraged. There is also a very big placebo effect with athletes believing that without supplements they will not be able to perform and their confidence being affected because of this. Economic concerns: the cost of supplements is a very big concern because high quality supplements are expensive, and athletes who cannot afford them often try to cut corners and seek cheaper, less safe alternatives.

Financial exploitation: Some companies may market ineffective or dangerous products to vulnerable athletes in the name of sponsoring them. Should not be encouraged. Right, now let's talk about some myths which are there in the supplement world. Creatine is essential for all sports. Now, creatine monohydrate is popular for a decade, but there is a serious lack of evidence of safety with long-term use.

Supplementation may improve exercise performance in adults who are performing high-intensity, short-duration exercises such as weightlifting and jumps, although the extent of benefit is variable. But yes, for high-intensity, short-duration activity, creatine supplementation may help. Be careful with the dosage and be careful with the long-term prescription of creatine, because it has a direct effect on the kidneys. Vegetarian athletes are healthier.

Of course, vegetarian athletes show low rates of heart disease, cancer, hypertension, and diabetes, but the studies say it is more due to a healthier lifestyle. If an athlete is vegan, please ensure that they are supplemented, because pure vegan diets without supplementation are unhealthy. Iron supplementation, because iron from plant sources has low absorption rate. So these are the things which should be taken care of for vegetarian athletes. They are not necessarily healthier, but it is because the lifestyle is more healthier.

That is why the diseases are less. Vitamins and minerals give energy. No. Vitamins and minerals act as catalysts and cofactors in energy production. They improve the rate of production of energy.

They do not give energy per se. Meals rich in grains, vegetables, fruit, meat, and dairy give athletes energy. Multivitamin-mineral supplements may be necessary for some who have micronutrient deficiency, or as an insurance policy to prevent performance detrimentation. Sports drinks are unnecessary. No, sports drinks are required during intense activity and in hot, humid weather.

Carbohydrates maintain blood glucose levels during exercise, and athletes tend to consume more fluids when their beverage is sodium- and carbohydrate-based. Sodium and carbohydrates present in the beverages cause faster fluid absorption. And sodium maintains the drive to continue drinking fluids during exercise. Sodium also helps the body to retain the fluid that is consumed. So sports drinks are definitely necessary.

However, there is a caveat. There are different types of sports drinks which are available, and I will try and tell you what to look for in a sports drink. Now, if you look at a sports drink, try and look for the percentage of carbohydrate in the sports drink. Any sports drink with percentage of carbohydrate less than 6% can be used as a replenishment drink during the exercise, because if the carbohydrate is higher than 5 to 6%, the insulin

response will kick in if you take that drink during exercise, and you will go into hypoglycemia. So generally, during the exercise, during the competition, look for a drink which has carbohydrates less than 6%. That is your replacement drink. Now, the second thing to look for is carbohydrates more than 6% can be your isotonic replenishment drinks.

When you finish your competition, you can use these drinks. The third type of drink is a drink which has some amount of protein along with carbohydrates. Now, this is your recovery drink. So, you have three types of drinks: isotonic replenishment drinks, your in-competition drinks, and your recovery drinks.

Because of the presence of protein along with the carbohydrate, recovery drinks tend to drive the carbohydrate across the cell membranes and improve glycogen replenishment. That is why they are called recovery drinks. So choose your sports drinks with care. Shakes, bars, and drinks can replace a balanced diet. Definitely not. Shakes, bars, and drinks are an effective and convenient method for the athlete to boost his or her nutrient needs during training, competition, and travel. They are missing key nutrients including phytochemicals, antioxidants, and fiber. And the risk of contamination is very high. So please be very clear.

They cannot replace a balanced diet. They can be used in specific conditions for specific needs only. More protein means more muscle. Or more muscle means more protein. Let's see. Athletes need more protein than non-athletes. That is common.

The timing of the protein intake in relation to the workout is important. Muscle fiber hypertrophy and repair need protein. And eating some protein before and just after a workout ensures that there is adequate amino acid availability for repair of muscles. And carbohydrate and protein post-exercise will improve recovery.

We just talked about recovery drinks. And if you can take the recovery drinks, fine. If not, a meal with a combination of carbohydrate and protein will improve your recovery. Fluids during exercise slow you down. No. Fluid loss is the single largest contributor to fatigue during exercise.

The American College of Sports Medicine has recommendations that say that athletes should tailor their fluid intake during exercise to their sweat rate. And drinking fluids during exercise improves performance and increases endurance. Of course, we are talking about endurance exercise mainly. Avoid dehydration at all costs. Yes, we should avoid dehydration, but we don't have to get too hyper over it.

Reduced exercise performance typically occurs with a loss of 2% or more body weight as fluid. The time required to down enough fluid may hamper timings if the competitions

are shorter. Rather than avoiding dehydration at all costs, it is recommended that the athletes stay in the hydration zone during exercise and maintain the body weight typically between their typical body weight before exercise and within 2% below that weight.

Simple carbs are bad. Not exactly. During exercise, muscles need carbohydrates that can be digested and absorbed quickly. After exercise, simple carbohydrates are more effective at flipping the metabolic switch from catabolism to anabolism. During training, you generally prefer complex carbohydrates because you want to replenish the glycogen stores before competition. And just before, during, and just after exercise, simple carbohydrates are preferred.

Carb loading improves performance. Yes, in cases of endurance athletes only. So there is a proven endurance benefit for vigorous events or training sessions that go on beyond 90 minutes. So if you have a training session or an event more than 90 minutes, definitely go in for carbohydrate loading. Short sessions may not derive benefit from carbohydrate loading.

And carbohydrate loading is helpful in situations where the glycogen reserves are depleted. Pasta the night before an endurance event constitutes carbohydrate loading. No, it doesn't work that way. Carbohydrate loading requires a combination of tapering exercise and increased carbohydrate consumption over a few days to few weeks. A single carbohydrate meal is not an effective method for boosting muscle glycogen levels.

No eating before exercise. No, it doesn't work that way. There has to be a pre-exercise meal which depends on the intensity and duration of exercise. Eating before exercise staves off hunger and improves glycogen fluid stores. Pre-exercise meal: high in carbohydrates, moderate in protein, low in fat and fiber. 2 to 4 hours before should be your last pre-exercise meal.

After that, it is always fluids. There is a note about fad diets for sportspersons. Generally not recommended because of the risk of osteoporosis, kidney failure, ketosis, insomnia, loss of muscle mass, dehydration, increased risk of injury, nutritional imbalances, reduced endurance, and compromised immunity. So as far as athletes are concerned, please forget fad diets. Be careful while using supplements.

Be careful while using energy drinks. So to conclude: supplements can provide a lot of benefits but will come with very serious risks also. Athletes should be aware of the potential health, legal, and ethical issues regarding supplement use. Professional guidance and informed choices are the key to safe supplement use. And always avoid fad diets and supplement abuse.

These are the references, ladies and gentlemen. I would like you to go through them in case you are interested in learning more about the topic. I seem to have finished, ladies and gentlemen. Thank you very much for sticking with this course through week 8. Thank you, and Jai Hind.