Let's Excel Together

CANADIAN ACADEMY OF SPORTS NUTRITION

Lecture 23:

How to Naturally Increase Growth Hormone

Part 2

Copyright Protection:

GH Enhancing Supplements:

- Arginine.
- Co – Enzyme Q10.
- Colostrum.
- Ferulic acid/Gamma Oryzanol
- Glutamine
- Glycine.
- Lysine.
- Omega – 3 fatty acids.
- Ornithine.
- Ornithine Alpha – Ketoglutarate (OKG)
- Potassium.
- Tryptophan.
- Vitamin B3.

Lysine:

- **Lysine is an essential amino acid and may be classified as a nutritional sports ergogenic aid.**

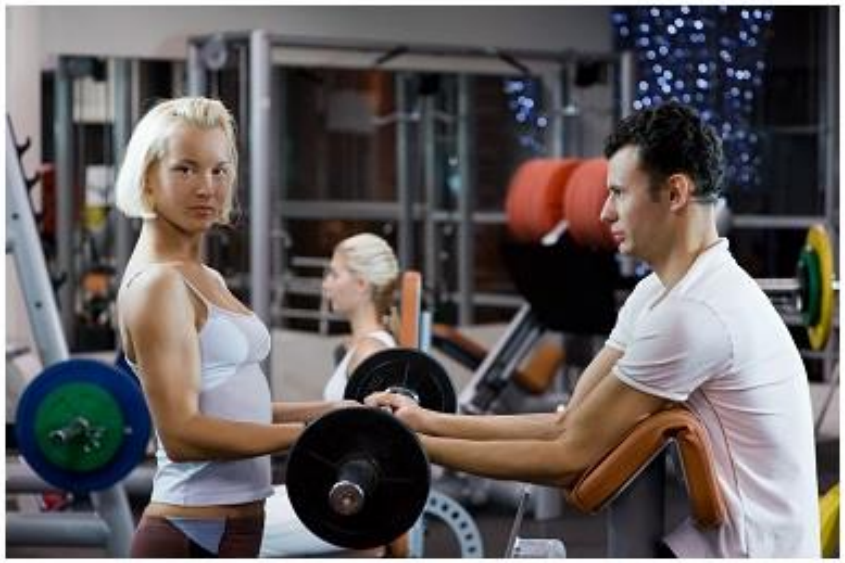
- **One of the interesting effects of lysine is its ability to fight cold sores (herpes viruses). It is claimed that lysine reduces the viral growth and can ameliorate cold sores.**

- **It is also required for collagen formation.**

Athletic Benefits of Lysine:

- 1) Stimulates the release of GH.

- 2) Lysine, with the help of vitamins C and B6, plays a role in the formation of carnitine, an amino acid that burns fat and can increase endurance in athletes.



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Non – Athletic Benefits of Lysine:

The following conditions may benefit from lysine:

- **a) Cold sores.**
- **b) Shingles (Zona).**
- **c) Herpes of the genitalia.**
- **d) Osteoarthritis.**
- **e) Osteoporosis.**

Dosage and Side Effects:

- There is no standard dosage for lysine.
- To prevent recurrence of herpes virus: 1 to 3 grams per day.
- Athletes : 2 to 3 grams in divided dosage, one hour before exercise and at bedtime.

- Athletes involved in high intensity training need higher amounts of lysine.

- Though there is in no side effects at suggested doses, abdominal cramps and transient diarrhea have been reported in those taking higher doses.

Omega – 3 Fatty Acids:

- **Will be discussed in a separate lecture.**

Ornithine:

- **Ornithine is a nonessential amino acid that is structurally similar to arginine and is formed from arginine in the urea cycle within the body.**
- **For this reason, some researchers call ornithine "*son of arginine*".**
- **The popularity of ornithine among athletes is related to its effect on releasing growth hormone.**

Benefits of Ornithine:

- 1) Increases GH and insulin levels.
- 2) Ornithine plays an important role in the urea cycle and act as a precursor for amino acids glutamic acid, proline and citrulline.
- 3) Ornithine is also an important component of ornithine alphaketoglutarate (OKG).
- 4) Ornithine improves liver function in liver cirrhosis.

Dosage and Side Effects:

- **There is no standard dosage for ornithine. Dosages ranging from 2 to 15 grams per day have been used.**

- **Using ornithine with glutamine, arginine or lysine enhances their effects.**

- **Even though no toxicity and side effects have been reported in up to 6 grams per day, consumption of larger amounts of ornithine may cause indigestion, bloating, and diarrhea.**

Ornithine Alphaketoglutarate (OKG):

- **One of the popular sports supplements among athletes.**
- **It is not an amino acid. It consists of ornithine bonded to two molecules of alphaketoglutarate.**
- **Consumption of OKG has been common in Europe, especially in France, after surgery, burns, trauma and muscle wasting states; this is the reason why OKG is called "*French tickler*".**

Athletic Benefits of OKG:

- **Enhances the release of GH.**
- **Has anti-catabolic effects .**
- **Has a protective effect against overtraining syndrome and post – exercise muscle breakdown.**
- **Improves athletic performance by increasing the duration of exercise and delaying exhaustion time.**

- **Helps with recovery from OTS and sports injuries.**
- **It is an important ammonia scavenger.**
- **Helps with post – exercise recovery by replenishing glycogen stores.**

Dosage and Side Effects:

- **As a GH enhancer: 10 – 12 grams a day.**

- **Some studies claim that magnesium, vitamins C and B6 accelerate the effectiveness of OKG.**

Potassium and Growth Hormone:

- **Potassium is one of the principal and most abundant electrolytes in the body.**
- **It is important in transmitting nerve impulses and maintaining normal fluid balance.**
- **It is also necessary for protein synthesis, muscle contraction, hormonal health, and maintenance of the heart regularity.**

- **Some evidence indicates that potassium deficiency induces growth retardation because it reduces circulating levels of growth hormone and IGF-I.**

- **Though the mechanism is unknown, potassium deficiency reduces growth hormone and IGF-I levels up to 50% and the level of testosterone to near zero in animals.**

- **Relationship between potassium shortage and synthesis of growth hormone and testosterone in human beings needs more investigation.**

Tryptophan:

- Tryptophan is an essential amino acid that has a key role in the formation of serotonin, a substance that promotes sleep and is beneficial in treating depression.

- In addition, it is a precursor for vitamin B3. About 60 mg of tryptophan equals to 1 mg of vitamin B3.

- Some investigators claim that using 0.5 to 2 grams of tryptophan can correct sleep disorders, stimulates the release of GH, decreases anxiety and depression.

Athletic Benefits of Tryptophan:

- **May stimulate the release of growth hormone.**
- **May help with athletic jet lag.**
- **May be useful in pre – competition anxiety.**
- **May help with weight management by decreasing appetite.**

Non – Athletic Benefits of Tryptophan:

The following conditions may benefit from tryptophan:

- **Depression.**
- **Anxiety disorders.**
- **Bipolar disorder.**
- **Eating disorders.**
- **Fibromyalgia.**
- **Insomnia.**
- **Migraine.**
- **Tension headache.**

Dosage:

- **It is generally recommended 0.5 to 2 grams taken before sleep.**

- **Using vitamins B3, B6 and C with tryptophan helps tryptophan to convert easily to serotonin and may cause better results.**

- **Tryptophan may cause drowsiness and headaches. It is recommended that tryptophan not be used before exercise and driving.**

Vitamin B3 (Niacin):

- **Vitamin B3, also called niacin and nicotinic acid, is the only vitamin that can release growth hormone.**

- **This water-soluble vitamin B plays a vital role in cell metabolism and helps the body release energy from protein, fat, and carbohydrate during metabolism.**

- **Acting as a co-enzyme, niacin contributes to the synthesis of sex hormones by the adrenal glands.**

- **It also involves in a good digestion by stimulating the production of hydrochloric acid in the stomach.**

- **Niacin deficiency results in a condition called *pellagra*, which in Italy, means thick skin. This disease manifests with symptoms and signs related to the skin, digestive system, and brain. It is usually characterized by a triad of dermatitis, diarrhea, and dementia (DDD, or 3D).**

Food Sources:

The major food sources of niacin include:

- **Meats: liver, chicken and fish.**
- **Brewer`s yeast.**
- **Legumes.**
- **Nuts: peanuts and almonds.**
- **Bananas.**
- **Whole grains.**
- **Avocados.**
- **Eggs.**
- **Sesame seeds.**

Recommended Daily Allowance for Vitamin B3

Category /Condition	Age (yr.)	Niacin (mg)
Infant	0.0-0.5	5
	0.5-1.0	6
Children	1-3	9
	4-6	12
	7-10	13
Males	11-14	17
	15-18	20
	19-24	19
	25-50	19
	>50	15
Females	11-14	15
	15-18	15
	19-24	15
	25-50	15
	>50	13
Pregnancy		17
Breastfeeding	1st 6 months	20
	2nd 6 months	20
Athletes		20-100

Athletic Benefits of Vitamin B3:

- **Vitamin B3 (especially xanthinol nicotinate) simulates GH release.**

- **Improves blood circulation. This is why niacin is a key ingredient in pre – exercise products.**

Non - Athletic Benefits of Vitamin B3:

It may also be used to support the following conditions:

- **a) Alcohol withdrawal.**
- **b) High levels of cholesterol.**
- **c) High levels of triglyceride.**
- **d) Osteoarthritis.**
- **e) Intermittent claudication.**
- **f) Raynaud`s disease.**
- **g) Anxiety.**

- **h) Acne.**
- **i) Schizophrenia.**
- **j) Painful menstruation (dysmenorrhea).**
- **k) Multiple sclerosis (MS).**
- **l) Cataracts.**
- **m) Hypoglycemia.**
- **n) Low function thyroid.**
- **o) HIV support.**
- **p) Tardive dyskinesia.**

Dosage and Side Effects:

- **As a GH enhancer: 200 – 1000 mg a day.**

- **The most frequent side effect of niacin is skin flushing, which is mediated by the release of prostaglandins D2 and E2.**
- **Flushing could occur when amounts as low as 50 to 100 mg are taken on an empty stomach.**

- **The skin flushing is a harmless but bothersome reaction that usually starts within 10 – 20 minutes after taking niacin and often lasts up to 30 minutes.**

Flushing can be reduced by one of the followings:

- 1) Starting at lower doses and gradually increasing to higher doses.
- 2) Taking no-flush or sustained-released forms.
- 3) Taking 300 mg of aspirin about 30 minutes before taking niacin.
- 4) Taking 200 – 400 mg of Ibuprofen per day.
- 5) Taking niacin along with meals.

- **Considering that GH-releasing dosage is high, consuming niacin with foods will reduce the incidence of the flushing.**

- **High doses of vitamin B3, more than 500 to 1000 mg per day, could cause inflammation of the stomach, and damage to the eyes and liver.**

- **It can also elevate blood levels of sugar and uric acid. Therefore, high doses of niacin should not be taken by people with peptic ulcer, active liver disease, diabetes, and gout.**

GH-Releasing Exercises:

- **Regular exercise is another way to stimulate your growth hormone level.**

- **The benefits we get from exercises mainly result from the elevation of our natural growth hormone levels.**

- **Both high intensity aerobic exercises and anaerobic exercises (weight training) stimulate the production of growth hormone.**

- **Studies indicate that the greater the intensity of exercise, *the greater the increase in hormone production.***

- **Interestingly, vigorous exercise hikes the levels of GH, and stimulation of growth hormone enhances the capacity of intensive exercise.**

- **Some studies indicate that exercise may increase the secretion of GH in women more than in men.**
- **Combining aerobic exercise with weight training is the best approach.**
- **Consuming GH-releasing supplements in conjunction with exercising can result in significant physical improvement.**

- **The mechanism by which exercise stimulates the secretion of growth hormone is unknown, but three possibilities have been suggested:**
- **1) Low levels of blood glucose.**
- **2) Accumulation of lactic acid.**
- **3) Beta-endorphins release.**

Aerobic Exercises:

Aerobic exercises are those physical activities that

- **1) involve the major muscle groups rhythmically or continuously…. and**
- **2) raise your heart rates up to 60 to 90 percent of its maximum rate for at least 20 minutes.**

- **Distance running, stair climbing, playing soccer, rowing, treadmill running, biking, swimming, cross-county skiing, and jogging are aerobic exercises.**

- **Incredible as it may seem, engaging in high intensity aerobic workouts often uses less stored fat than would a low intensity exercise like walking.**

- **Studies have shown that WJR (walk-jog-run) is the best growth hormone-releasing aerobic exercise.**

Some Benefits of Aerobic Exercises:

- Strengthen the heart and lungs.
- Slow the resting heart rate. The lower the resting heart rate, the better.
- Neutralize the negative effects of stress hormone (cortisol).
- Cause the body to use oxygen and calories more efficiently.
- Increase stamina and decrease anxiety.

- **Burn fat and begin to shift the ratio of fat to muscle.**
- **Increase the amount of blood pumped by the heart during exercise.**
- **Help the body cope with emotional stress easily.**
- **Reduce blood pressure and help the body control it effectively.**

Anaerobic Exercises:

- **Anaerobic exercises are those physical activities that require short, intense bursts of energy followed by periods of rest.**

- **Using specific muscle groups with little or no cardiovascular conditioning, they do not raise your heart rates up to its maximum rate.**

- **Weight training is the best example of anaerobic exercises.**

Advantages of Anaerobic Exercise:

- **Increase muscles strength and size.**
- **Firm and tone the body.**
- **Burn fat and increase lean body mass.**
- **Define muscles.**

GH-Releasing Workouts:

Any GH-releasing workout includes the following four basic elements:

- **Warm up (5-10 minutes)**
- **Weight training (30-40 minutes)**
- **Aerobics (30-40 minutes)**
- **Cool down (5-10 minutes)**

Seven Tips for GH-Stimulating Programs:

To maximize your results from GH supplementation, please pay attention to the following important points:

- **1. Never start with one supplement only. Always combine 3 – 5 supplements. Basically, you go with a regimen or protocol which consists of more than 3 products, as they increase each other's effectiveness.**

- **2. Do not skip your hormonal exercises. Make them an integral part of your program. By doing them, you increase the levels of both growth hormone and testosterone.**

- **3. Stay with a regimen for at least 4 to 6 months. Obtaining desired results requires prolonged consumption of supplements.**

- **4. If a regimen or protocol does not work, use a different protocol with different combination.**

- **5. Never stick to only one regimen. Change it from time to time.**

- **6. Throughout your exercise program, supplement your body with vitamins and minerals, particularly calcium, potassium, and vitamins B6 and C.**

- **7. Have your liver and kidneys functions checked periodically and if possible the level of IGF-I.**

Homework:

- 1) Describe athletic and non – athletic benefits of the amino acid lysine.
- 2) Describe the most common side effect of vitamin B3 and how you could prevent it.