



Lecture 28:

How to Naturally Increase Testosterone

Part 1

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- Because testosterone is a **multifunctional hormone**, it has its own users, some people for increasing or restoring **libido**, some for preventing changes arising from **aging**, and some for **building muscle mass**.

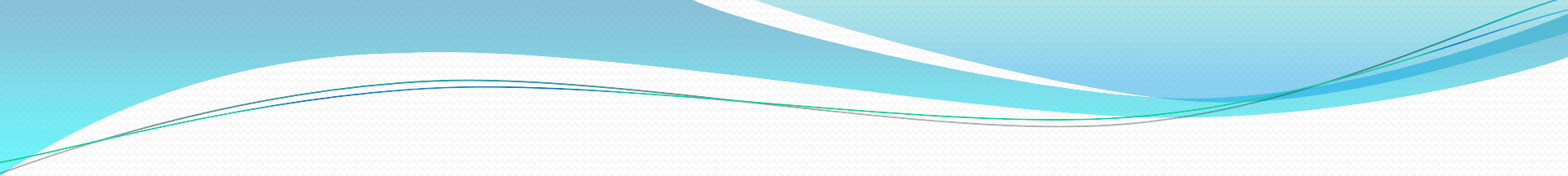


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- It is out of the question to prevent and eradicate the consumption of steroid hormones such as testosterone because of increased and continued interest in having better physical appearance and athletic performance.



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- Unfortunately, strict rules and regulations will not control drug abuse by athletes and non-athletes.
 - The highly advanced laboratory techniques will never be able to fight drug abuse.
 - To us, to combat drug abuse, the first thing that we should do is to **identify the causes**.

- Engaging in a battle with drug abuse without finding its causes is similar to only reducing fever in a **febrile patient**, whereas fever is only a sign and can be a clue to a lethal cancer or a life-threatening condition.
- Similarly, **drug abuse is a sign, not a cause.**
- It is our understanding that the only thing we can do is to try to reduce its incidence and to offer **alternatives** for banned and harmful chemical drugs abused by people.

Natural Ways to Boost Test:

- The alternative to using synthetic testosterone is to elevate hormone levels naturally.
- The natural ways to maintain normal levels of testosterone or to increase the level are:
 - 1) Using food supplements
 - 2) Exercise.

Testosterone – Boosting Supplements:

- **Boron.**
- **Chrysin.**
- **Damiana.**
- **DHEA.**
- **Maca Root.**
- **Nettle .**
- **Pygeum Africanum.**
- **Saw Palmetto.**
- **Smilax.**
- **Tribulus Terrestris.**
- **Vitamin E.**
- **Zinc.**



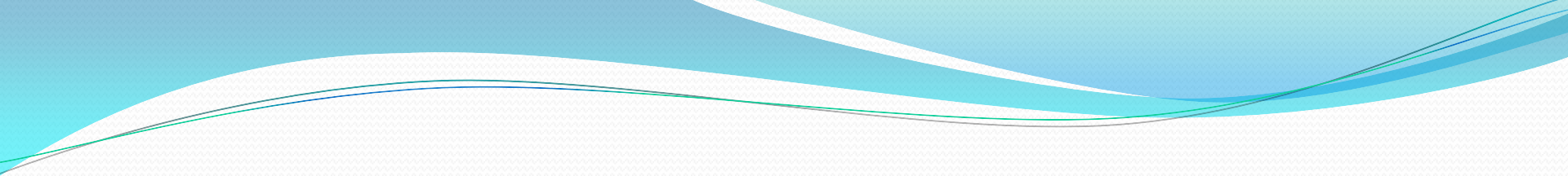
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Boron:

- Boron is a trace mineral normally found in the body and nature.
- A controversial mineral, yet most studies supports its role in hormone production.
- This mineral appears to help maintain **bone health** and **hormonal balance**.

Functions of Boron:

- The possible mechanisms of actions of boron are:
- a) Affects metabolism of **calcium, magnesium, phosphorus, and vitamin D**. It decreases urinary loss of calcium and magnesium by enhancing their reabsorption in the kidneys.
- b) May enhance the production of estrogen.
- c) May increase testosterone level.

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- **d)** Has been linked to blood sugar and improves insulin function.
 - **e)** May have an impact on **abstract thinking skills** (for example, memory and attention), and fine motor skills.

Food Sources of Boron:

- Boron is naturally found in the body with the highest concentration in the **parathyroid glands**.

Plant Foods	Amount per 100 grams
Dried prune	27 mg
Parsley	27 mg
Raisins	25 mg
Almonds	23 mg
Peanuts	18 mg
Apple sauce	2.8 mg
Peaches	1.8 mg
Broccoli florets	1.8 mg



Dried prunes, raisins, and almonds are excellent sources of boron.

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Athletic Benefits of Boron:

- The testosterone-boosting ability of boron did motivate athletes to use it.
- Though there is no strong evidence that boron can increase the levels of testosterone in athletes to the desired level and improve their athletic performance, studies indicate that **boron deprivation for 3 weeks** or more may have a negative effect on physical performance.
- Some athletes use boron as a “***steroid replacer***” during the off days of their steroid program.

Non – Athletic Benefits of Boron:

The following conditions may benefit from boron:

- **Osteoporosis.**
- **Osteoarthritis.**
- **High blood pressure.**
- **Atherosclerosis.**
- **Diabetes type II.**
- **Vaginal yeast infection (as boric acid).**
- **Astringent and disinfecting agent for the skin and eyes (as boric acid).**

Dosage:

- Currently there is no recommended daily allowance for boron. However, **1 – 3 mg daily** in the diet seems sufficient.
- As a food supplement, it is taken **3 – 6 mg a day**.
- For **vaginal yeast infections**, boric acid is used intravaginally by inserting 1 – 2 suppositories at night for **not more than two weeks**.

Side Effects:

- Boron is considered safe with regular doses.
- The tolerable upper limit of boron for adult is **20 mg daily**.
- It might cause some side effects at extremely high doses.
- Boron toxicity may occur due to excessive use or increased sensitivity to boric acid.

Clinical Findings of Boron Toxicity:

Early findings:

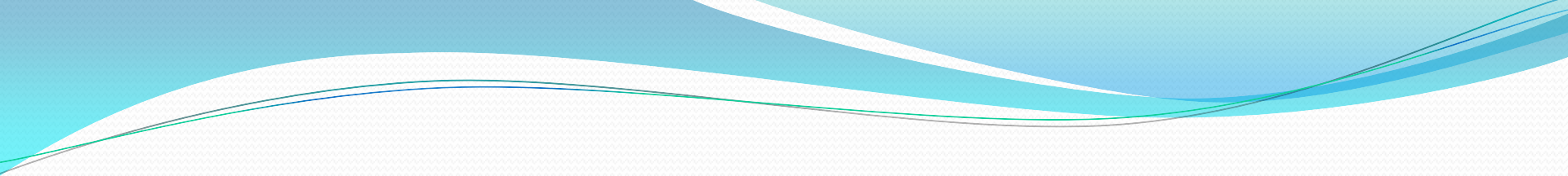
- Increased urinary loss of vitamins C, B₂, and B₆.
- Loss of appetite.
- Nausea.
- Vomiting.
- Diarrhea.
- Irritability.
- Tremors.
- Lethargy.
- Headaches.

Late findings:

- Anemia.
- Hair loss.
- Seizure.
- Skin rashes.
- Depressed mood.
- Testicular atrophy.
- Male infertility.
- Developmental defects (when used higher doses in the first trimester of pregnancy).

Interactions:

- 1) Boron may decrease blood levels of **vitamins C, B2 and B6** followed by a need to increase their daily intakes.
- 2) Boron may increase blood levels of **magnesium**.
- 3) Boric acid should never be used topically to the skin of infants and on open wounds.

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- **4)** Boron supplementation should be avoided in the following conditions:
 - **a)** Kidney failure and diseases.
 - **b)** Estrogen – sensitive medical conditions: breast cancer, fibrocystic disease of breast, uterine cancer, ovarian cancer, endometriosis, and uterine fibroids.

Chrysin:

- Also known as **Flavone X**.
- It has recently won the attention of athletes.
- Some claim that it may be bodybuilders' best kept secret.

- Containing an active component named **5,7-dihydroxyflavone**, Chrysin is a naturally occurring flavonoid.
- It is the most potent natural flavonoid found in some plants, such as **Passiflora caerulea**, **Prunus domestica**, and **Pinus asistata**.
- Some researchers claim that there is a small amount of Chrysin in **honeycomb** and **chamomile**.

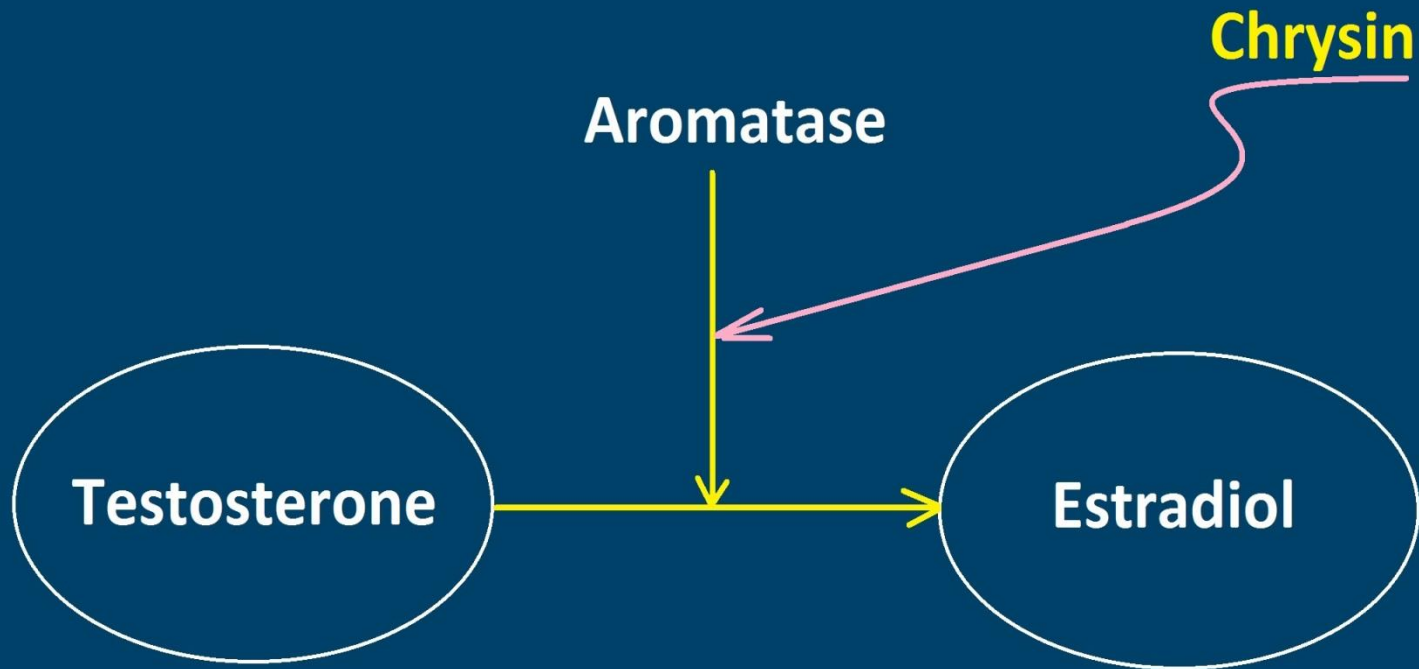




Functions of Chrysin:

- The conversion phenomenon of testosterone into estradiol is called “**aromatization**”. It is accelerated by an enzyme named aromatase. **Chrysin is a potent aromatase inhibitor.**
- Another possible mechanism by which it works is through “**lifting negative feedback**”, that is, your body starts to produce more testosterone in response to low levels of estrogen resulted from inhibited aromatization.

"Aromatization"



Chrysin and Athletes:

- Athletes claim that Chrysin increases the levels of testosterone up to **20-30% within a few weeks**.
- There is no standard dosage for Chrysin, but as a dietary supplement, **500 to 1000 mg per day** can be used.
- Some power athletes may use **up to 3000 mg daily**. Athletes should divide the daily dosage, taking one part in the morning and another part about one hour before a workout.

- For best results, Chrysin can be used along with other testosterone enhancers including **Tribulus terrestris, zinc, and DHEA.**
- Two ingredients of Tribulus terrestris, **daidzein** and **genistein**, do the same work that Chrysin does.
- It is recommended that people with **liver and kidney diseases** do not take Chrysin.

Damiana:

- Damiana is a plant from the family of Passifloraceae. The extract of damiana leaf has been hailed as an **aphrodisiac** and a **stimulant of sexual desire**.



The active ingredients in damiana are:

- **Terpenes.**
 - **Tannins.**
 - **Apigenin.**
 - **Damianin.**
 - **Beta – sitosterol.**
 - **Hexacosanol.**
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- **Damiana extract has been shown to block aromatase enzyme.**

Athletic Benefits of Damiana:

- **a)** It may boost testosterone level.
- **b)** It may protect from overtraining syndrome.
- **c)** It may reduce pre – competition anxiety.

Non – Athletic Benefits of Damiana:

- The following conditions may benefit from damiana:
 - **a)** Low sex drive.
 - **b)** Erectile dysfunction.
 - **c)** Anxiety.
 - **d)** Depression.

Dosage:

- **Damiana is available commercially in tablet or capsule form either alone or in combination.**
- **The usual dosage of damiana leaf extract is 450 – 900 mg a day.**

Homework:

- 1) Describe the functions and food sources of boron.
- 2) Describe as to how chrysin work.



