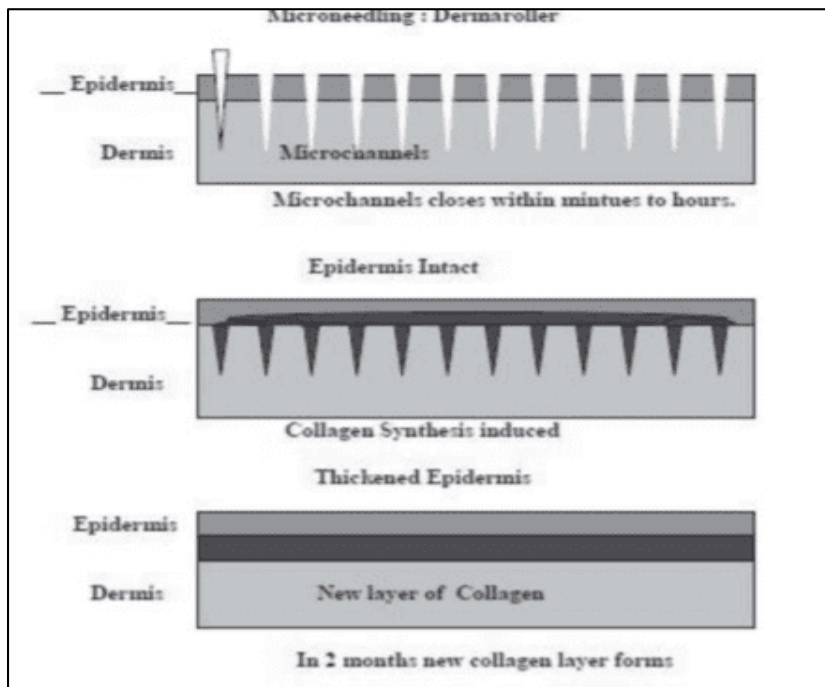


COLLAGEN MAXING

Derma-rolling: 400% increase



Skin becomes thicker with greater than 400 % increase in collagen deposition and significantly more elastin . Collagen fibre bundles qualitatively increases, thickens and more loosely woven in both papillary and reticular dermis. It appears to have laid down in normal lattice pattern than in parallel bundles as in scar tissue.

Sunscreen: 56% increase

Collagen I formation was 56 percent less in the papillary dermis of photodamaged skin than in skin protected from the sun ($P < 0.001$)

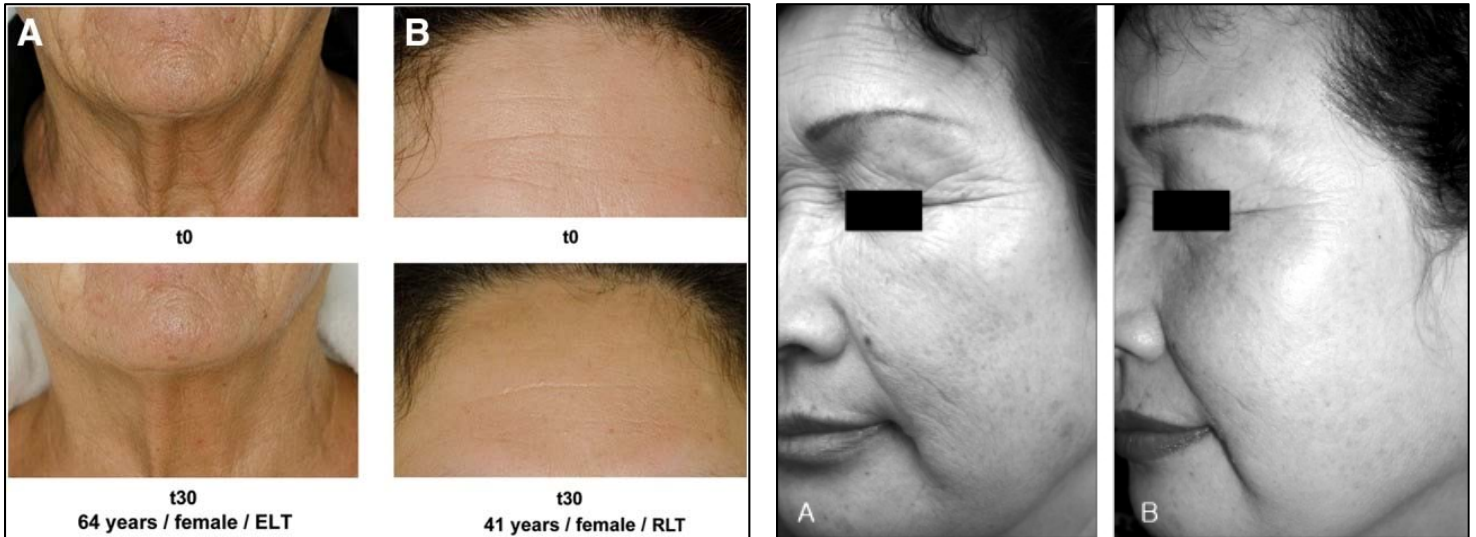
<https://www.nejm.org/doi/full/10.1056/NEJM199308193290803>

Red light: Increases collagen (4.6ug/ml -> 36.36ug/ml after 5hours)
- Aging: Photo Evidence

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3926176/>

<http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2687728/>

After 30days of sessions lasting 15-30minutes



- Collagen production

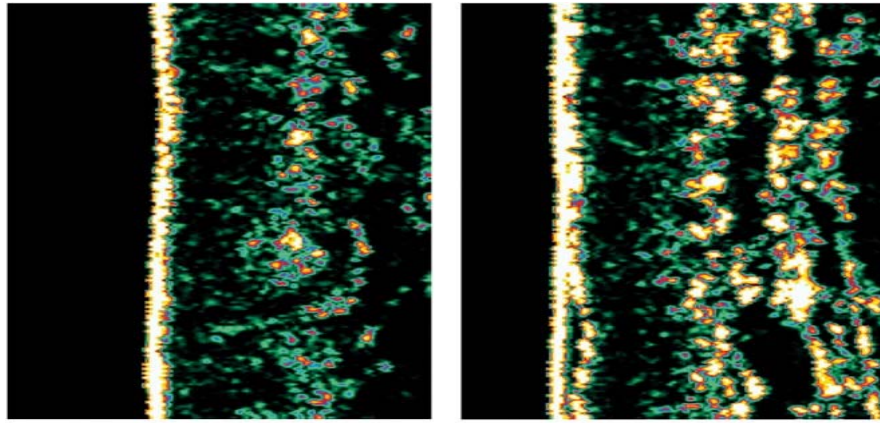
<https://www.ncbi.nlm.nih.gov/pubmed/19593638>

"In treated animals, the extent of edema and the number of inflammatory cells were reduced ($P < 0.05$). The amount of collagen in graft treated with low-level laser were significantly higher than those of controls ($P < 0.05$) and were statistically more prominent on the 14th day after surgery. The mean count of fibroblasts was significantly higher in the low-laser therapy group within the 3rd day, showing a marked influx of fibroblasts into area. In conclusion, wound healing of the ADM appear to be positively affected by laser therapy."

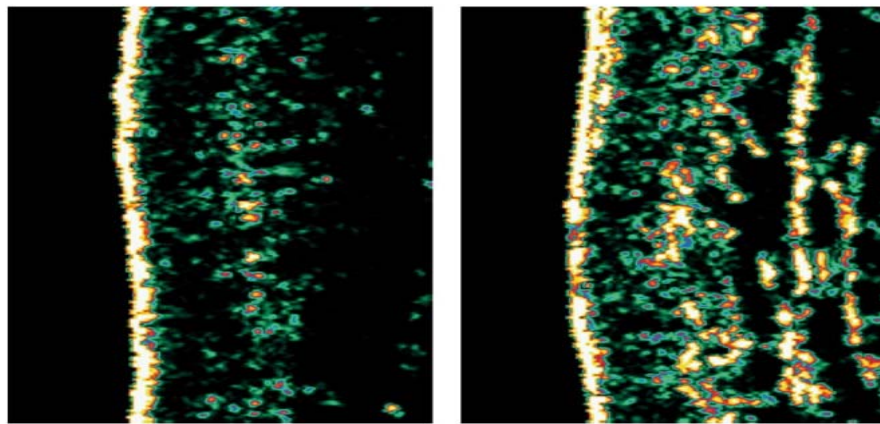
(fibroblasts are responsible for collagen production)

Collagen density after 30days after infrared light

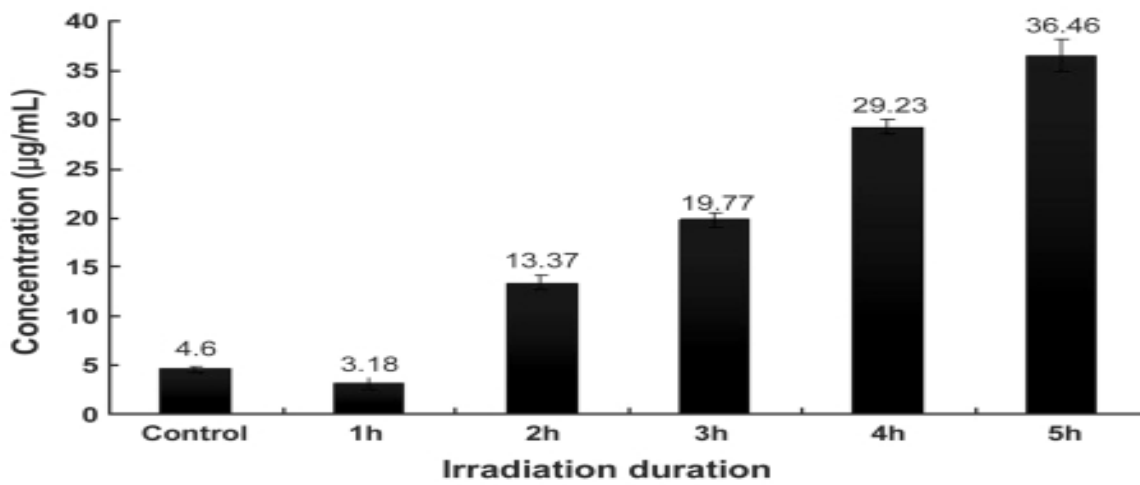
therapy <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3926176/>



t0 t30
46 years / female / RLT



t0 t30
51 years / female / ELT



(concentration of collagen)

<http://www.ncbi.nlm.nih.gov/pubmed/15654716>

Skin textural improvement by digital imaging and surface profilometry is accompanied by increased collagen I deposition with reduced MMP-1 (collagenase) activity in the papillary dermis. This technique is a safe and effective non-painful non-ablative modality for improvement of photoaging.

<http://www.ncbi.nlm.nih.gov/pubmed/19764893>

The fibroblasts cultured with the keratinocyte conditioned medium, particularly with a combination of 630/850, increased collagen levels.

<http://www.ncbi.nlm.nih.gov/pubmed/19587693>

Results yielded a mean percent difference between LED-treated and non-LED-treated HRS of 31% in levels of type-1 procollagen and of -18% in MMP-1. Furthermore, profilometry quantification revealed that more than 90% of individuals showed a reduction in wrinkle depth and surface roughness, and, via a blinded clinical assessment, that 87% experienced a reduction in the Fitzpatrick wrinkling severity score after 12 LED treatments. No adverse events or downtime were reported. Our study showed that LED therapy reversed collagen downregulation and MMP-1 upregulation. These findings suggest that LED at 660 nm is a safe and effective collagen-enhancement strategy.

Acne: (most of these are with blue light as they have synergistic effects anti inflammatory + anti bacterial)

<https://www.ncbi.nlm.nih.gov/pubmed/24313686>

At 1 month, >90% clearance or moderate improvement occurred in 22/50 (44%) patients in the LED group. There was no control group.

<https://www.ncbi.nlm.nih.gov/pubmed/27762647> (states it is more efficient than salicylic acid for acne)

"The combined use of red and blue lights due to their anti-inflammatory and

wound-healing properties is a more efficient alternative for treating Acne vulgaris in relation to SA and proves more reliable and without side effects, improving the adolescents' skin health."

<https://www.ncbi.nlm.nih.gov/pubmed/23278295>

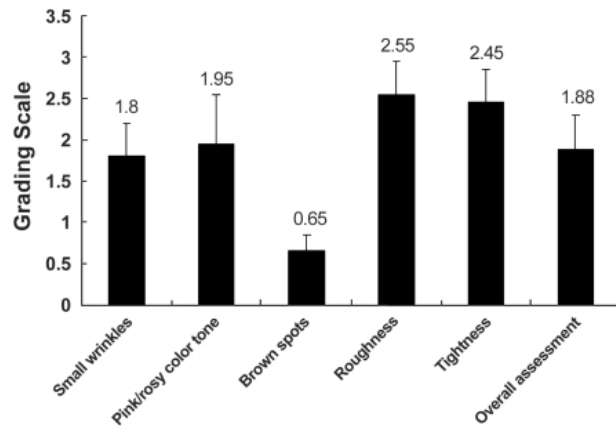
"At the final visit at 12 weeks, both inflammatory and non-inflammatory acne lesions had decreased significantly, by 77% and 54%, respectively, in the treatment group. No significant difference was observed in the control group.

<http://www.ncbi.nlm.nih.gov/pubmed/16414904>

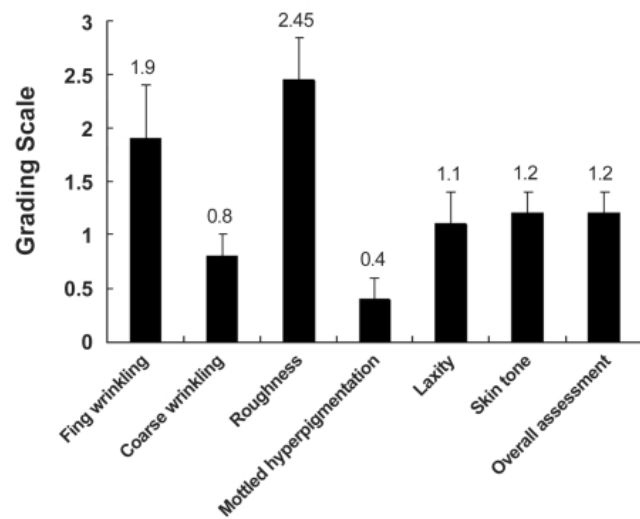
Reduces Acne with a 90% Reduction in Pore Size (when combined with blue light)

Clinical evaluation: how much improvement on a 10point scale

Self evaluation



Medical evaluation



TL:DR

- Increases collagen (4.6ug/ml -> 36.36ug/ml after 5hours)
- Decreases wrinkles and fine lines
- Decreases acne (from 77%->90% improvements noted) (more effective than salicylic acid)
- Fasting decreases collagen.

GHK-cu peptide

What it is? - Copper peptide GHK-Cu is a naturally occurring copper complex of the tripeptide glycyl-L-histidyl-L-lysine. The tripeptide has strong affinity for copper(II) and was first isolated from human plasma. It can be found also in saliva and urine. In plasma the level of GHK is about 200 ng/mL (10⁻⁷ M) at age 20, but declines to 80 ng/mL by age 60.

Up-to-date, it is established that GHK-Cu is able to:

- Tighten loose skin and reverse thinning of aged skin
- Repair protective skin barrier proteins
- Improve skin firmness, elasticity, and clarity
- Reduce fine lines, depth of wrinkles, and improve structure of aged skin
- Smooth rough skin
- Reduce photodamage, mottled hyperpigmentation, skin spots and lesions
- Improve overall skin appearance
- Stimulate wound healing
- Protect skin cells from UV radiation
- Reduce inflammation and free radical damage
- Increase hair growth and thickness, enlarge hair follicle size

Studies showing the importance in collagenmaxxing (3 Seperate studies)

Study 1: A number of clinical studies confirmed GHK-Cu's ability to improve appearance of aging skin. A facial cream containing GHK-Cu applied for 12 weeks to the facial skin of 71 women with mild to advanced signs of photoaging increased skin density and thickness, reduced laxity, improved clarity, reduced fine lines and the depth of wrinkles [14].

Study 2: A GHK-Cu eye cream applied for 12 weeks to around-the-eye area of 41 women with mild to advanced photodamage performed better than placebo and vitamin K cream. It reduced lines and wrinkles, improved overall appearance, and increased skin density and thickness [15].

Study 3:-Cu applied to thigh skin for 12 weeks improved collagen production in 70% of the women treated, in contrast to 50% treated with the vitamin C cream, and 40% treated with retinoic acid [16]. In addition to improving skin laxity, clarity, firmness and appearance, reducing fine lines, coarse wrinkles and mottled pigmentation, and increasing skin density and thickness, GHK-Cu cream applied twice daily for 12 weeks also strongly stimulated dermal keratinocyte proliferation [17].

- With their pilot study for topical application of copper tripeptide complexes in aged skin, Krüger et al. confirmed an increase in skin thickness in the range of the epidermis and dermis, improved skin hydration, a significant smoothing of the skin by stimulating collagen synthesis, increased skin elasticity, a significant improvement in skin contrast and an increased production of collagen I [18,19].

Study showing importance in hair growth(I can't seem to find any clinical studies of of ghk-cu's affects on hair growth but I have found studies on other types of copper peptides)

Study 1:“A copper binding peptide (PC1031) had the effect of follicular enlargement on the back skin of fuzzy rats, covering the vellus follicles; **the effect was similar to that of topical minoxidil.**”

Source:<https://www.ncbi.nlm.nih.gov/pubmed/8326148>

Study 2:This trial tested the effects of AHK-Cu, a copper peptide closely related to GHK-Cu, on human hair follicles and found that:

*“AHK-Cu (10(-12) – 10(-9) M) stimulated the elongation of human hair follicles ex vivo and the proliferation of [dermal papilla cells] in vitro [...] **The present study proposed that AHK-Cu promotes the growth of human hair follicles, and this stimulatory effect may occur due to stimulation of the proliferation and the preclusion of the apoptosis of [dermal papilla cells].**”*

Study 3: This study also shows how copper peptides have been proven to increase hair transplant success

The dermal papilla is what regulates the development and growth of hair follicles. When mature, it instructs surrounding cells to proliferate and differentiate to create hair. If copper peptides result in more dermal papilla cells, as suggested by this study, then it seems likely they may encourage hair growth too. In fact, multiplying dermal papilla cells is one of the proposed methods for hair cloning.

We can assume GHK-CU will have a similar effect on hair growth

Although I could not actually find any studies on it multiple of the sources I've found stated that copper peptides can block dht.

Sources:

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6073405/#B14-ijms-19-01987>

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4508379/>

<https://gro.md/blogs/blog/5-ways-copper-peptides-boost-hair-growth>

<https://huskybeard.com/blogs/better-beard-blog/copper-peptides-for-beard-growth>

Skin and DHT

Blocking DHT destroys your androgen receptors. Androgens indeed play a huge role in the amount of collagen in the skin, and this could partially explain why hairloss drugs typically effect the skin in a negative manner.

Androgen receptors produce 50% of collagen in the skin:

<https://pubmed.ncbi.nlm.nih.gov/15610513/>

- [This study](#) added DHT to rat organs and found that it increased (or "restored") their previously nonexistent collagen while castrated. (They also tried estrogen but it made no difference)

- [More abstracts](#) on Androgens and collagen:

- [Action of androgen on fibroblast collagen synthesis: a receptor-dependent response.](#)
-

This is why many people that use Finasteride and Minoxidil report dark circles and dry skin. Our skin is a huge signal for our internal health, and it seems it is also an important signaler for sexual potency, as Androgens play a huge role in sperm count and libido. Finasteride and Minoxidil are both 5-AR inhibitors and this could partially explain why people notice bad skin on them. However, everyone's body responds differently to Androgens and have varying amounts of Androgens in them so it's also possible to take Finasteride/minoxidil or another 5-AR inhibitor and see no noticeable difference to your collagen and even your libido. But unlikely, especially with prolonged usage.

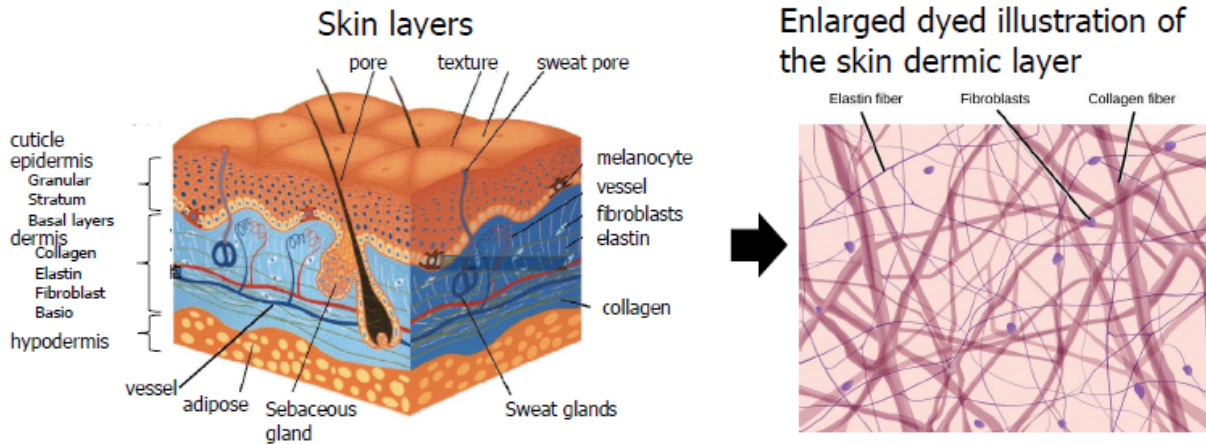
- Minoxidil blocks androgen receptors (so does finasteride and every other hair growth method) - <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4039155/>

- Microneedling inhibits androgen receptor aswell, but it's helping the hair grow in the scalp region.
-

- Androgens **positively** impacted elastin, and high elastin is what we should aim if we want good youthful skin, read this

What is Elastin ?

Elastin is a elastic protein and constitutes fibrils, which expand and contract by 1.5-fold. Elastin fibrils are present in the whole body and have a role to stabilize collagen fibers. The elastin contents are about 50 % in artery⁽¹⁾, 20% in lung⁽²⁾, 2~5% in dermic layer of the skin⁽³⁾, respectively. The elastin contents of artery and dermic layer decrease with age, which is one reason to cause wrinkle.



(1) *Comprehensive Biochem.*, **26C**, 665 (1971); (2) *Anal. Biochem.*, **74**, 441 (1976); (3) *Nature*, **208**, 1224 (1965)

Hormones and skin

<https://www.ncbi.nlm.nih.gov/pubmed/20352370>

Low magnesium levels have been correlated with low T and magnesium supplementation has been proven to increase natty T in clinical trials.

<h3 style="text-align: center;">Dietary</h3> <table border="0"> <tr> <td>Correct Deficiencies</td> <td>Boosting Supplements</td> </tr> <tr> <td>Vitamin D ✓</td> <td>Ashwagandha</td> </tr> <tr> <td>Zinc ✓</td> <td>Fenugreek</td> </tr> <tr> <td>Magnesium ✓</td> <td>...to be continued</td> </tr> </table>	Correct Deficiencies	Boosting Supplements	Vitamin D ✓	Ashwagandha	Zinc ✓	Fenugreek	Magnesium ✓	...to be continued	<h3 style="text-align: center;">Social</h3> <p>Aim To:</p> <p>Excel everywhere you can</p> <p>...</p> <p>This increases your prestige in the eyes of other people, which your HPG axis then recognizes</p>
Correct Deficiencies	Boosting Supplements								
Vitamin D ✓	Ashwagandha								
Zinc ✓	Fenugreek								
Magnesium ✓	...to be continued								
<h3 style="text-align: center;">Health</h3> <p>Aim to maintain healthy:</p> <p><i>Bodyfat</i> (Below 25%)</p> <p><i>Blood Pressure</i> (Below Hypertension)</p> <p><i>Body</i> (Fit w/ No Chronic Diseases)</p>	<h3 style="text-align: center;">Lifestyle</h3> <p>Testosterone may also benefit from:</p> <p><i>Sex</i> (3+ times per week)</p> <p><i>Sleep</i> (at least 8 hours per night)</p> <p><i>Lifting Weights</i> (temporary spike)</p>								

Working out

Cortisol is OK to be spiked a bit post workout, and inflammation is normal to happen post workout. The purpose of your workout is to cause adaptations, and these 2 help with that.

BUT, if you have chronically high cortisol, and you're in an inflammatory state, it's unhealthy and also a major cause of early ageing

Working out is one of the most legit ways to extend your healthy active life on earth (and maybe the duration of your life as well). Without enough magnesium you're making it a generator of too much cortisol and inflammation.

ACTH, Cortisol and IL-6 Levels in Athletes following Magnesium Supplementation

Background

Physical exercise activates the hypothalamo-pituitary-adrenal (HPA) axis and induces the body's inflammatory response. Due to contemporary dietary habits and increased energy expenditure, athletes are susceptible to depletion of magnesium ions. The aim of our study was to investigate, through assessment of plasma ACTH, serum IL-6, and salivary/serum cortisol levels, if chronic magnesium supplementation might reduce damaging stress effects in amateur rugby players.

Methods

Rugby players (N=23) were randomly assigned to intervention and control group. Basal samples were collected before intervention group started a 4-week-long supplementation with magnesium (500 mg Mg/d). Blood and saliva sampling were done a day before the match (Day-1), on the morning of competition (Game), and during a six-day-long recovery period (Day1, Day3 and Day6). ACTH, serum/salivary cortisol, IL-6 and total/differential leukocytes counts were determined at each time point.

Results

- There was a statistically significant increase in ACTH concentration in intervention group compared to control group
- reductions in cortisol concentrations between the two groups were the greatest at Day-1 ($p < 0.01$) and at the day of competition (Game) ($p < 0.01$).
- Our results revealed that magnesium completely abolished the increase in IL-6 level noted in control group on Day1 and Day3 vs. Day-1 ($p < 0.01$) and also diminished the rise in neutrophil/lymphocyte ratio in intervention group vs. control group ($p < 0.01$).

Conclusions

These results suggest the possibly important influence magnesium supplementation might have on the change of parameters of HPA axis activity and reduction of immune response activation following strenuous physical exercise such as a rugby game.

- Cortisol increased after JUST ONE MONTH of gymcelling in the group without enough magnesium:

(look at the second graph only; the saliva cortisol is more important because it shows the active/bioavailable cortisol) - **eat MORE foods with magnesium and maybe supplement as well.**

Hyaluronic acid

It's main function is to retain water to keep your tissues well lubricated and moist.

- We were born with an abundance of Hyaluronic Acid in our bodies. Ever notice how babies have smooth, full, and plump skin? It helps with smoothing out fine lines, and gives back the radiant glow to your skin, Hyaluronic acid is a humectant, which helps pull moisture into the skin and will plump up your wrinkles and soften the skin. It's great at bringing in moisture to parched skin, which is often an issue with acne skin.

Injection = **bad** way of getting hyaluronic acid

Applying facial serum = **Good** way of getting hyaluronic acid

Nutrition

To fully optimize our skin's ability to promote collagen production, we need to understand the process of collagen synthesis on a fundamental level. When mRNA moves into the cytoplasm and interacts with ribosomes, both magnesium and zinc are needed for translation to occur. After translation, this polypeptide chain travels to the endoplasmic reticulum (ER). The polypeptide chain undergoes enzymatic modifications, including hydroxylation of proline and lysine which requires iron and vitamin C as cofactors (and oxygen). This process creates procollagen which is released from the fibroblast. The ends of the procollagen molecule are removed by peptidases and the molecule becomes tropocollagen. Tropocollagen undergoes covalent bonding through lysyl oxidase and this creates a collagen fibril. [Mg, Zn, Fe, and Vitamin C are necessary co-factors.](#)

Vitamin C

- If you don't eat a diet heavy in raw plant based foods and greens, you **need** to supplement vitamin C if you want to attain optimal collagen.

1) WHICH KIND OF VITAMIN C TO TAKE?

- Do **NOT** take vitamin C that would come into contact with your teeth. This includes vitamin C powder, chewable tablets, fizzy tablets and juices. Ascorbic acid is acidic and will erode your tooth enamel over time. Which is irreparable.

- Plain ascorbic acid should be your first choice and is the cheapest one too.

- You have two options here:

- > vitamin C capsules

- > compressed tablets.

The first one is the best option because there will be zero contact with your teeth. Make sure the capsule shell is easily dissolvable and not time-release or enteric-coated. (Vegetable) cellulose or gelatin also are fine.

- Make sure your pills have the highest dosage available; at least 1,000 mg per pill. You need lots of vitamin C and you don't wanna be swallowing hundreds of pills every day to reach your total dosage.

- Your pills should be additive-free and only contain vitamin C/ascorbic acid.

- If you can't find a cheap product with these properties, you can easily make your own vitamin C pills for dirt-cheap.

- > Buy pure ascorbic acid powder in bulk, get empty capsules in bulk and buy a capsule filling device (cheap and a valuable one-time investment which will save you loads of money in the long term). Then fill your own vitamin C capsules at your desired dosage. Bigger empty capsules mean more volume for a higher dosage per pill, BUT: you need to still be able to swallow the capsules, keep this in mind when buying.

2) DOSAGE:

- Close to bowel tolerance, optimally. Bowel tolerance = the minimum dosage that gives you watery stool/diarrhea (not dangerous).

> Find out your individual bowel tolerance by taking 2,000 mg of vitamin C per hour until your stool gets loose and watery/until you get diarrhea.
> Once you found your bowel tolerance, reduce dosage in 1,000 mg - 2,000 mg increments until your bowel movements normalize. They should be easy to pass, softish but still formed and somewhat solid.
This is your individual daily target dose now.

Keep in mind that **bowel tolerance fluctuates**, depending on your current requirements.

To adjust your dose when necessary, simply watch your bowel movements. If they get watery/diarrheal, reduce your daily dose as described above. If your stool becomes too solid or hard to pass, increase your intake until bowel tolerance and readjust from there. If you get sick or catch a cold, increase your dosage until bowel tolerance and also readjust.

3) HOW TO TAKE:

- with plenty of water
- Either on empty stomach/between meals or together with light foods such as fruits, vegetables, salads or meals low in fat. Not together with fat or meals rich in protein.
- Only take 1,000-2,000 mg of vitamin C at a time and space out doses evenly throughout the day, to reach your target daily dose. Your body can only absorb so much at once.
- Take vitamin C every day. You can do one day off per week (e.g. when you do a fast). Same with other nutritional supplements.
- stay hydrated (get enough water and electrolytes, especially potassium)

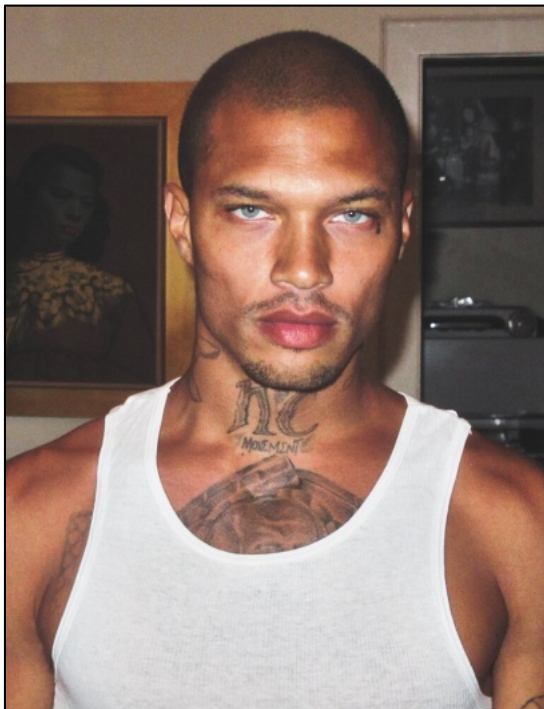
Topical vitamin C also stimulates type I and type III collagen synthesis. Vitamin C suppresses MMPs responsible for collagen degradation and increases the tissue inhibitor of MMPs, as well as mRNA levels of collagens I and III. Ferulic acid stabilizes solutions of vitamins C and E and doubles its photoprotection of skin **so if you're buying a vitamin C serum without it then it's over for you**. The vitamin C serum also must have a pH below 3.5 for effective penetration. Ascorbic acid serums

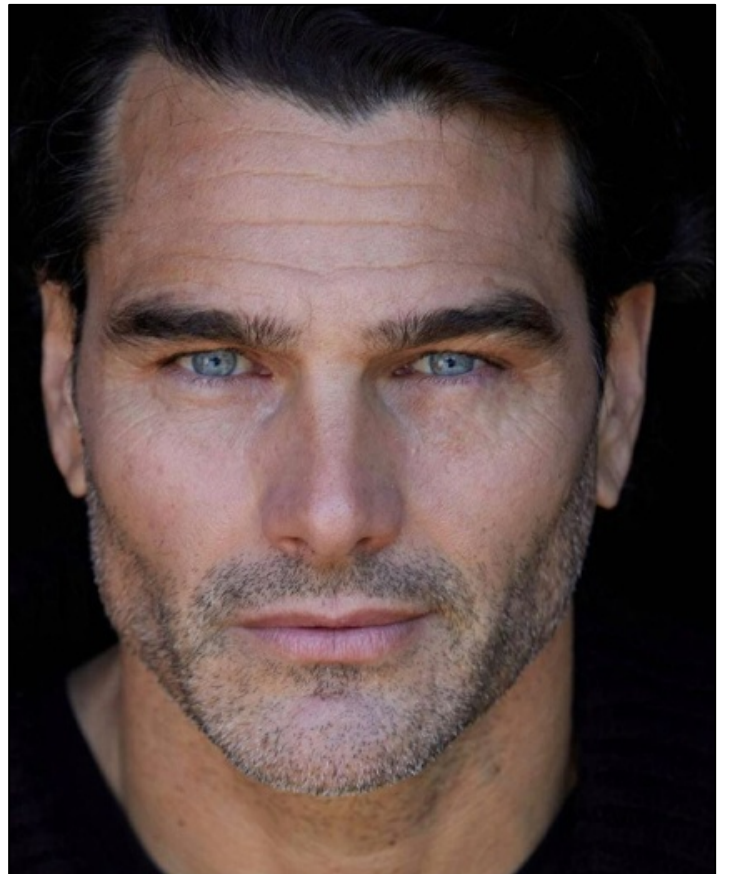
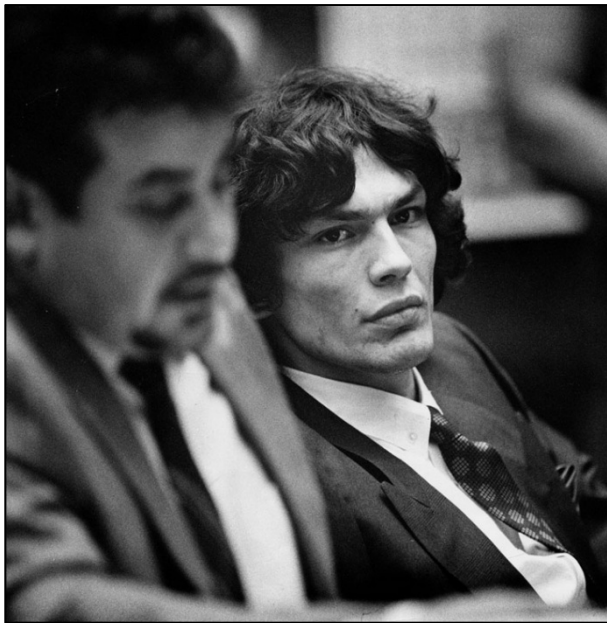
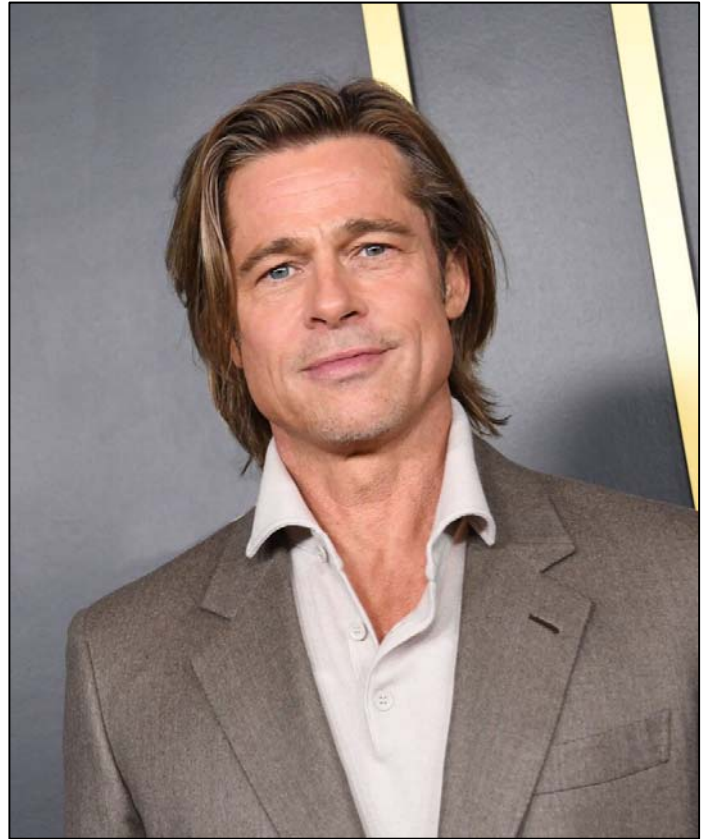
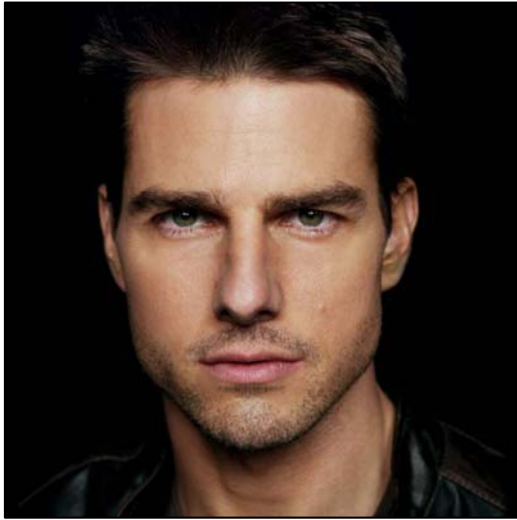
must be at least 10% to be effective. The maximum amount of ascorbic acid penetration was seen at 20% with a pH of 3.2, so a vitamin C serum with this concentration will give you the best results. Topical 5% niacinamide may stimulate collagen synthesis and the epidermal proteins. Apparently niacinamide had no strong documented effect on collagen, but a study showed that niacinamide was able to increase dermal matrix collagen production. 20% Glycolic acid treatment also increases type I collagen mRNA and hyaluronic acid content of human skin.

Facial bones and skin

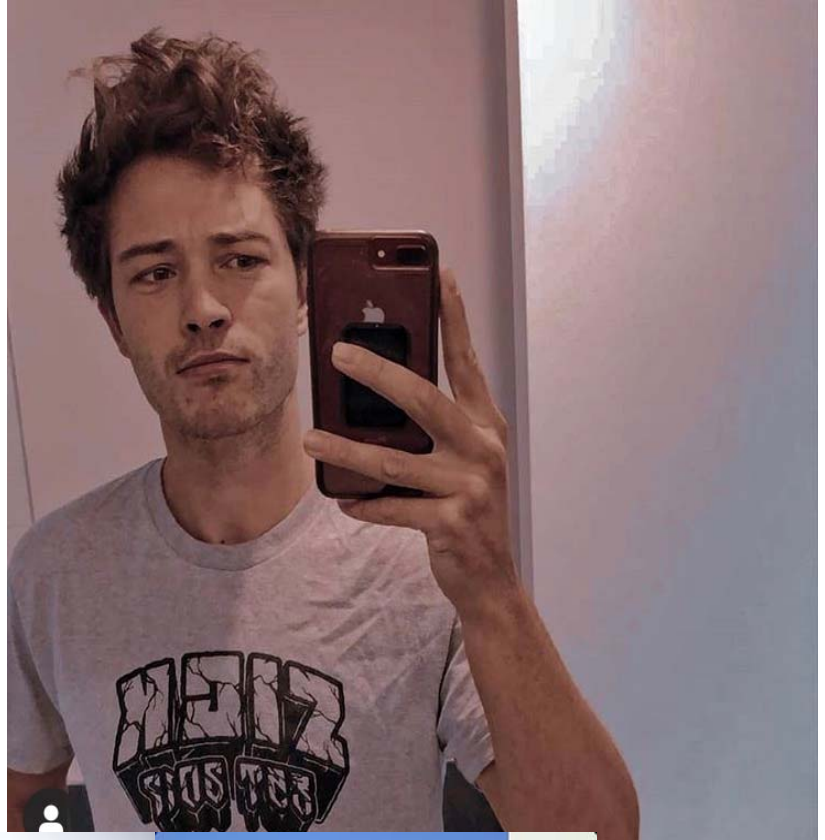
The majority of males that have aged well have one thing in common: wide projecting cheekbones/zygos and a wide jaw:

All of these people look good 25+ because of their bones.





Here's what happens to you after 25+ when you lack wide projected zygos and jaw:



in conclusion, if you want to age well after 25+ I would theorize getting zygo implants, and possibly widen your jaw through implants, chewing, etc.

- Aging is also about the midface and undereye fat pads/support, that are sinking down. The zygomatic arch and maxilla lose bone density as we age causing us to wrinkle even more. We need to be taking adequate amount of D3 and K2 through our lives.

40 years old exception - [Rodrigo Guirao Díaz](#)

- Any 18-24 year old girl would date him without even thinking. You might look like him if you execute everything perfectly



