

2016

Module III - Lifestyle practices for healthy telomeres



LIFE LENGTH

Disclaimer

THIS PRESENTATION IS NOT INTENDED TO PROVIDE ANY FORM OF MEDICAL ADVICE, SERVICES, OR RECOMMENDATIONS. THE PRESENTATION IS NOT INTENDED AND DOES NOT CONSTITUTE (I) THE PRACTICE OF MEDICINE OR THE PROVISION OF HEALTH CARE DIAGNOSIS OR TREATMENT, (II) THE CREATION OF A PHYSICIAN, PATIENT OR CLINICAL RELATIONSHIP, OR (III) AN ENDORSEMENT, RECOMMENDATION, OR SPONSORSHIP OF ANY PRODUCT OR SERVICE BY LIFE LENGTH OR ANY OF ITS AFFILIATES OR THEIR RESPECTIVE, AGENTS, EMPLOYEES, CONSULTANTS, OR SERVICE PROVIDERS.

1. Consequences of short telomeres
2. Tips to improve your lifestyle
 - Exercise
 - Diet
 - Mindfulness
 - Sleep & Rest
 - Superfoods
 - Hormones
3. Supplements
4. Links



Why should you care about the length of your telomeres?

Adverse consequences of short telomeres

- ✓ Loss of tissue renewal capacity
- ✓ Failure of stem cells to divide in sufficient numbers
- ✓ Poor immune response

Short telomeres accelerate the onset of age-related diseases

- ✓ Cardiovascular Disease
- ✓ Metabolic Syndromes incl. Diabetes Type 2
- ✓ Certain Cancers
- ✓ Central Nervous System Diseases
- ✓ Arthritis & Osteoporosis



Factors which influence telomere length

■ Environmental Factors

■ Genetic



Short telomeres are a contributing factor to virtually all age-related diseases. Genetics play a role in determining telomere length but environmental factors, including individuals' lifestyle choices, are even more important



Results received



Stratify the risk by comparing results with patient's medical history



DESIGN PERSONALIZED PROGRAM FOR EACH PATIENT



Exercise plan



Nutrition plan



Modify and monitor patients habits

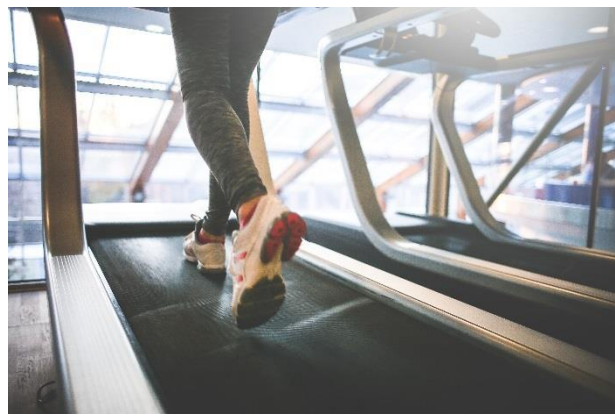


Stress management & meditation



Exercise can contribute to maintaining telomeres

- Studies show people who do no exercise have shorter telomeres than those who regularly exercise. This study has shown that exercise can lead to telomeres that appear up to **nine years younger**.
(Underlined references are clickable links)



- There are specific exercise programs for healthy aging therapies. For example, depending on your health and physical condition, you'll only need from 20-30 minutes per day to maximize your heart's pumping power, grow new muscle, trigger the production of key anti-aging hormones like HGH, DHEA, and burn fat.
- In general, from 3 to 5 sessions of moderate exercise per week may be enough.
- However, extreme exercise may be harmful as it produces free radicals and leads to inflammation.



Obesity accelerates telomere attrition

- Being overweight is not only an increased risk factor for high blood pressure, cardiovascular disease, Type 2 Diabetes and other conditions, but also has been shown to contribute to accelerated aging and telomere loss.
- While BMI is more widely used, body fat is often a more important measurement. You should attempt to maintain your percentage of body fat in the low end of the range for your appropriate age group and gender.

BODY FAT CHART FOR MEN (%)																		
AGE	18-20	2.0	3.9	6.2	8.5	10.5	12.5	14.3	16.0	17.5	18.9	20.2	21.3	22.3	23.1	23.8	24.3	24.9
	21-25	2.5	4.9	7.3	9.5	11.6	13.6	15.4	17.0	18.6	20.0	21.2	22.3	23.3	24.2	24.9	25.4	26.8
	26-30	3.5	6.0	8.4	10.6	12.7	14.6	16.4	18.1	19.6	21.0	22.3	23.4	24.4	25.2	25.9	26.5	26.9
	31-35	4.5	7.1	9.4	11.7	13.7	15.7	17.5	19.2	20.7	22.1	23.4	24.5	25.5	26.3	27.0	27.5	28.0
	36-40	5.6	8.1	10.5	12.7	14.8	16.8	18.6	20.2	21.8	23.2	24.4	25.6	26.5	27.4	28.1	28.6	29.0
	41-45	6.7	9.2	11.5	13.8	15.9	17.8	19.6	21.3	22.8	24.7	25.5	26.6	27.6	28.4	29.1	29.7	30.1
	46-50	7.7	10.2	12.6	14.8	16.9	18.9	20.7	22.4	23.9	25.3	26.6	27.7	28.7	29.5	30.2	30.7	31.2
	51-55	8.8	11.3	13.7	15.9	18.0	20.0	21.8	23.4	25.0	26.4	27.6	28.7	29.7	30.6	31.2	31.8	32.2
	56 & UP	9.9	12.4	14.7	17.0	19.1	21.0	22.8	24.5	26.0	27.4	28.7	29.8	30.8	31.6	32.3	32.9	33.3
		LEAN			IDEAL			AVERAGE				ABOVE AVERAGE						

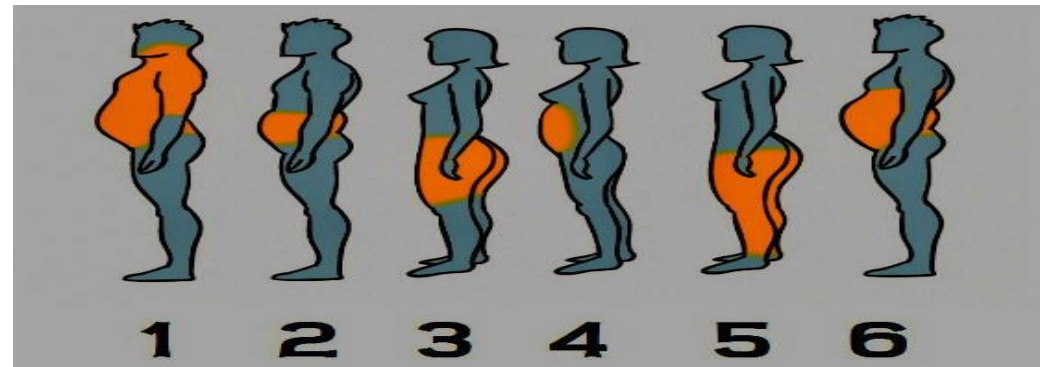
BODY FAT CHART FOR WOMEN (%)																		
AGE	18-20	11.3	13.5	15.7	17.7	19.7	21.5	23.2	24.8	26.3	27.7	29.0	30.2	31.3	32.3	33.1	33.9	34.6
	21-25	11.9	14.2	16.3	18.4	20.3	22.1	23.8	25.5	27.0	28.4	29.6	30.8	31.9	32.9	33.8	34.5	35.2
	26-30	12.5	14.8	16.9	19.0	20.9	22.7	24.5	26.1	27.6	29.0	30.3	31.5	32.5	33.5	34.4	35.2	35.8
	31-35	13.2	15.4	17.6	19.6	21.5	23.4	25.1	26.7	28.2	28.6	30.9	32.1	33.2	34.1	35.0	35.8	36.4
	36-40	13.8	16.0	18.2	20.2	22.2	24.0	25.7	27.3	28.8	30.2	31.5	32.7	33.8	34.8	35.6	36.4	37.0
	41-45	14.4	16.7	18.8	20.8	22.8	24.6	26.3	27.9	29.4	30.8	32.1	33.3	34.4	35.4	36.3	37.0	37.7
	46-50	15.0	17.3	19.4	21.5	23.4	25.2	26.9	28.6	30.1	31.5	32.8	34.0	35.0	36.0	36.9	37.6	38.3
	51-55	15.6	17.9	20.0	22.1	24.0	25.9	27.6	29.2	30.7	32.1	33.4	34.6	35.6	36.6	37.5	38.3	38.9
	56 & UP	16.3	18.5	20.7	22.7	24.6	26.5	28.2	29.8	31.3	32.7	34.0	35.2	36.3	37.2	38.1	38.9	39.5
		LEAN				IDEAL			AVERAGE					ABOVE AVERAGE				



Obesity accelerates telomere attrition

- For men, the target waist to hip ratio tends to increase with age but should be kept at the lower end of the range as much as possible.

	age	low	moderat	high	very high
female	20-29	<0,71	0,71-0,77	0,78-0,82	>0,82
	30-39	<0,72	0,72-0,78	0,79-0,84	>0,84
	40-49	<0,73	0,73-0,79	0,80-0,87	>0,87
	50-59	<0,74	0,74-0,81	0,82-0,88	>0,88
	60-69	<0,76	0,76-0,83	0,84-0,90	>0,99
male	20-29	<0,83	0,83-0,88	0,89-0,94	>0,94
	30-39	<0,84	0,84-0,91	0,92-0,96	>0,96
	40-49	<0,88	0,88-0,95	0,96-1,00	>1,00
	50-59	<0,90	0,90-0,96	0,97-1,02	>1,02
	60-69	<0,91	0,91-0,98	0,99-1,03	>1,03



- Additionally individuals must work hard to reduce abdominal and visceral fat.
- There are also individuals who appear slim but whose percentage of body fat is quite high due to the absence of lean muscle mass. Maintaining muscle mass is also crucial for healthy aging.



Mediterranean diet

- An ongoing prospective study by BMJ (British Medical Journal) showed that greater adherence to the Mediterranean diet was associated with longer telomeres. These results further support the benefits of adherence to the Mediterranean diet for promoting health and longevity.



Wine
(in moderation)



Vegetables
(raw, steamed, sautéed)



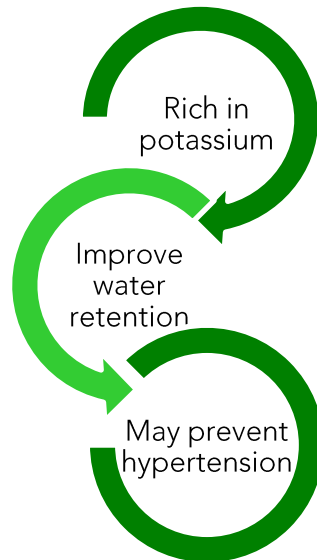
Fruit
(fresh, unprocessed)

- Many foods comprising the Mediterranean diet are rich in antioxidants which contribute to slowing the aging process.



Mediterranean diet

Green vegetables



Bluefish



Proteins of high nutritional level

Valuable source of Omega-3

Relatively low energy intake



Mediterranean diet



Dried fruits

- Oleic and linoleic acid → Control of cholesterol and blood circulation
- High content of calcium → Contributes to the prevention of osteoporosis
- Avoid salted / fried nuts and eat unroasted instead



Olive oil

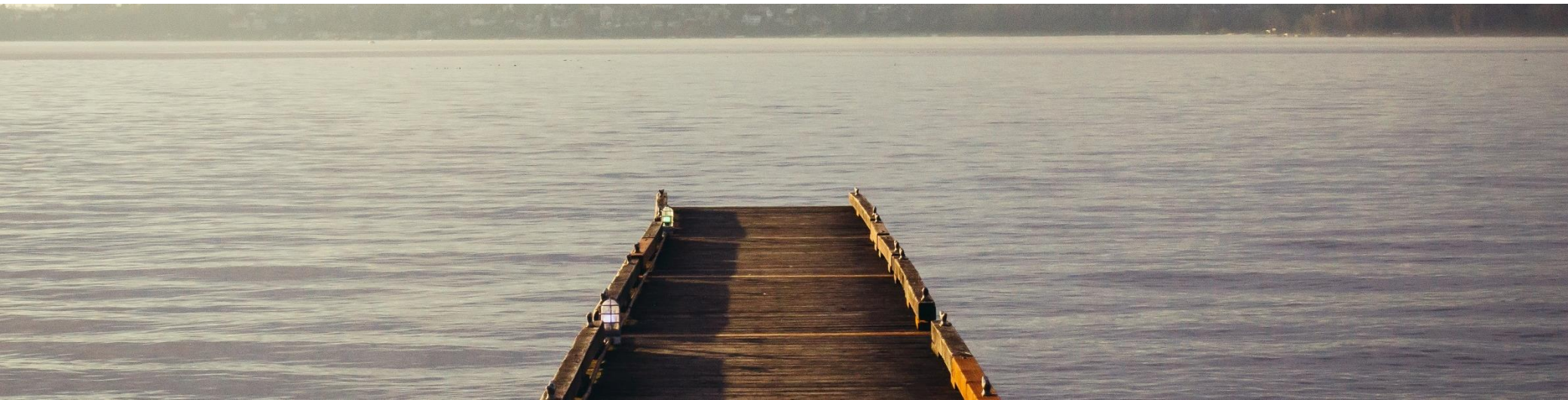
- Improves blood circulation
- Helps to reduce bad cholesterol
- Improves blood sugar levels
- Anti-inflammatory properties

- Try to purchase extra virgin whenever possible



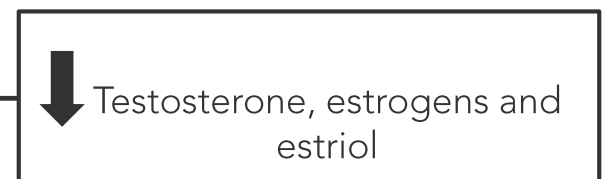
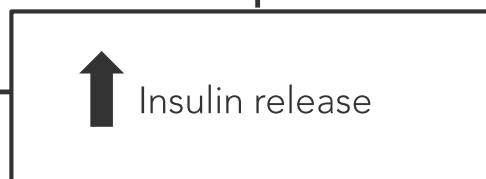
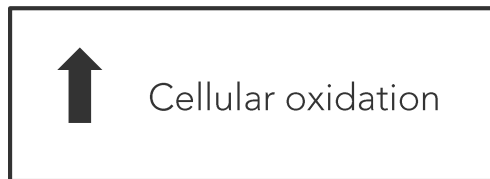
Mindfulness and meditation

- Researchers have found that patients who regularly meditate have better measures of mental health, blood pressure, and biomarkers compared to individuals who have never meditated.
- The Harvard University School of Medicine and Massachusetts General Hospital showed that meditation appeared to increase telomere length.



- Reduces pain and enhances the body's immune system
- Reduces feelings of anxiety, anger and confusion
- Increases blood flow and slows the heart rate
- Provides a sense of calm, peace and balance
- Helps reverse heart disease
- Increases energy
- Reduces stress

Mindfulness



Absorption of high amounts of sugars and lipids

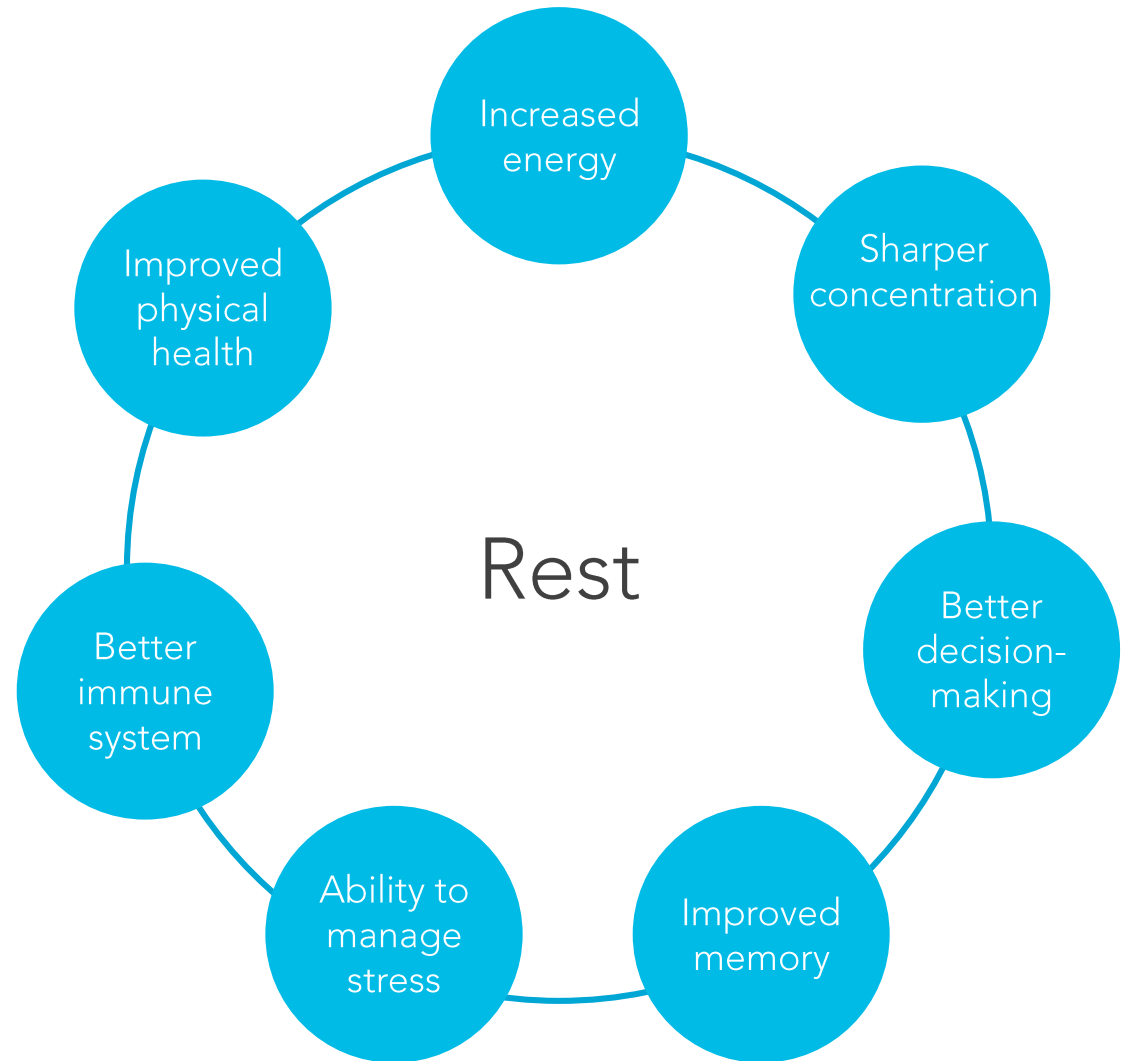


The benefits of sleep

7 sleep tips according to a study conducted by Mayo Clinic:

1. Stick to a sleep schedule
2. Pay attention to what you eat and drink
3. Create a bedtime ritual
4. Get comfortable
5. Limit daytime naps
6. Include physical activity in your daily routine
7. Manage stress

And don't go to bed with your Ipad or mobile phone





Superfoods

- Superfoods are calorie sparse and nutrient dense. They are superior sources of anti-oxidants and essential nutrients - nutrients we need but cannot make ourselves.



- Decrease and stabilize blood sugar levels
- Prevent and reduce inflammation
- Burn fats
- Decrease arterial pressure
- Regulate metabolism
- Protect against heart disease
- Prevent cancer



Some examples of superfoods

- Green superfoods contain help substances including proteins, protective photo-chemicals and healthy bacteria that helps to build cleaner muscles and tissues, aid your digestive system function and more effectively protect you against disease and illness.



Royal Jelly



Green smoothie

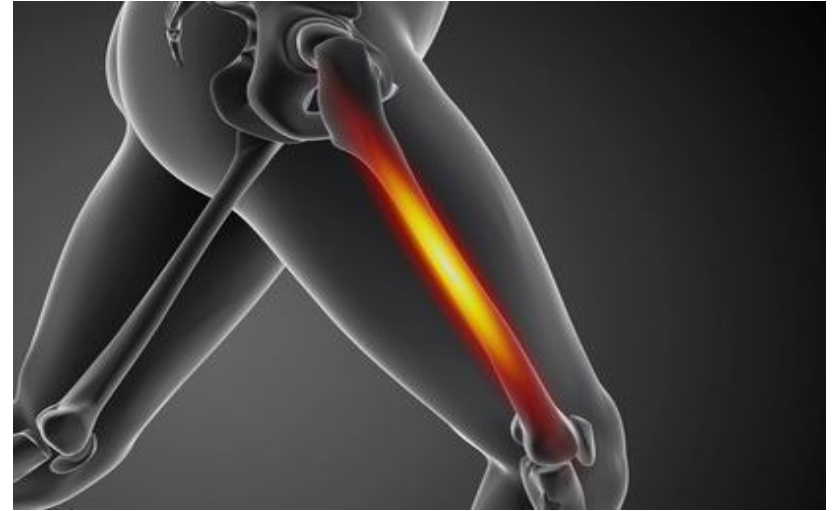


Seaweed

- Royal Jelly is a powerhouse of nutrients containing every nutrient necessary to support life. It is the world's richest source of pantothenic acid (also known as Vitamin B5), which is known to combat stress, fatigue and insomnia and is a vital nutrient for healthy skin and hair.
- Benefits of seaweed include that they contain up to 10 times more calcium than milk and 8 times as much as beef, and they contain lignans which have been shown to have anti-cancer properties.



Hormones



Some hormones decrease with age and have consequences:

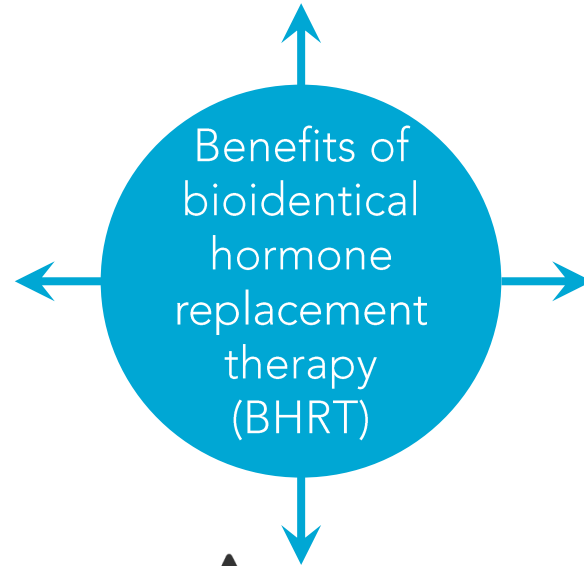
- **HGH:** changes in memory and attention, anxiety, lack of strength, decreased muscle mass, decreased bone density, impaired cardiac function and decreased insulin sensitivity.
- **Aldosterone:** low blood pressure, dehydration, low sodium levels and low potassium levels.
- **Estrogen and prolactin in women:** hot flashes, night sweats, palpitations, headaches, insomnia, fatigue, bone loss, vaginal dryness.
- **Testosterone in men:** insomnia, increased body fat and reduced muscle bulk, sexual dysfunction or infertility, decreased motivations and depression.



Hormones



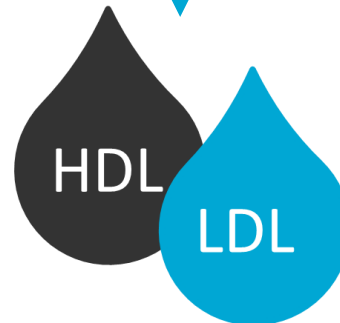
Better memory



Healthier heart



Increased energy



Reduced level of cholesterol in blood

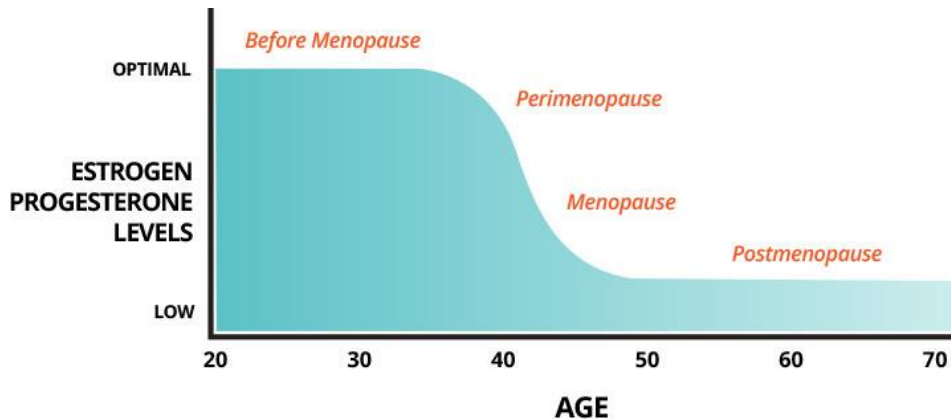




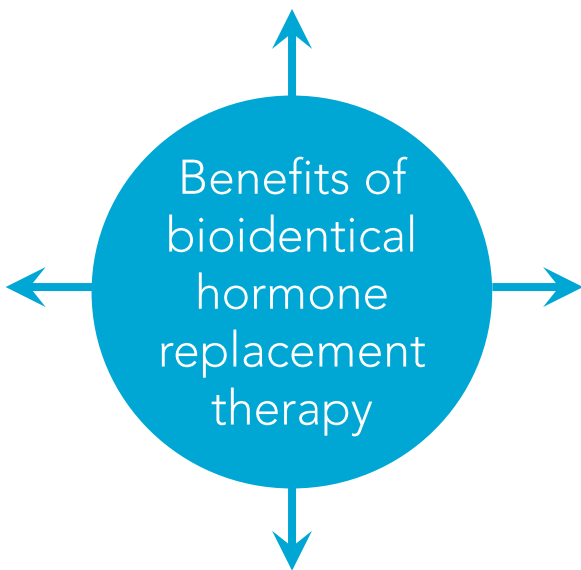
Hormones



Protects bones from osteoporosis



Eliminates hot flashes



Improves mood



Reduces skin wrinkles





Vitamins and nutritional supplements

VITAMIN B12 AND VITAMIN A

- **Vitamin B12** has strong antioxidant properties and has the effect of sparing the reactive oxygen species (ROS) scavenger glutathione, thus reducing oxidative stress.
- In addition, supraphysiological doses of vitamin B12 derived from supplements can inhibit nitric oxide synthase and potentially reduce inflammation.
- The reduced oxidative stress and inflammation due to the high dose of vitamin B12 may explain the longer telomeres in individuals who use vitamin B12 supplements.
- Telomere length is positively associated with dietary intake of **vitamin A** in women who do not take multivitamins. It plays an important role in your immune response, and if you are deficient, you become predisposed to infections that can promote telomere shortening.



Vitamin B12



Vitamin A



Vitamins and nutritional supplements

VITAMIN D

- Richards et al. reported a positive association between the concentration of vitamin D in serum and telomere length in peripheral leukocytes in women.
- The biologically active form of vitamin D, $1\alpha,25$ dihydroxyvitamin D₃, possesses immunosuppressive properties. This is reflected in the inverse relationship between plasma concentration of vitamin D and the inflammatory marker CRP.
- Telomere length has been negatively correlated to plasma concentration of CRP in several studies.
- In addition, vitamin D also reduces the expression of inflammation mediators interleukin-2 and interferon gamma.
- These anti-inflammatory and antiproliferative properties of vitamins D limit the turnover of cells, thus potentially reducing their telomere length attrition.





Vitamins and nutritional supplements

VITAMIN C & E

- Intake of vitamin C and E either from diet or from multivitamins is positively associated with longer telomeres in a dose-dependent manner in women.
- Age-dependent shortening of telomeres as well as decrease in telomerase activity in cell cultures can be slowed down and life span can be increased by addition of physiological concentrations of vitamin C or vitamin E to the culture medium.
- Vitamins C & E may limit oxidative damage to telomeric DNA that would otherwise cause shortening of telomere length





Vitamins and nutritional supplements

MAGNESIUM

- Magnesium is required for catalytic activity of a wide array of enzymes including those involved in DNA replication, DNA repair and RNA synthesis.
- Dietary magnesium intake has been shown to be positively related to telomere length in women.
- Long-term magnesium deficiency leads to shorter telomeres in rats and cells grown in culture.
- This decrease in telomere length during magnesium deficiency is also accompanied by an increase in oxidative stress, which is one of the factors that result in telomere attrition.





Vitamins and nutritional supplements

ZINC

- Zinc-dependent enzymes in the cell include DNA polymerases, RNA polymerases and reverse transcriptase's. Providing additional zinc in the cell culture medium increases activity of telomerase, which is a reverse transcriptase.
- Zinc also has a protective role in oxidative stress. While a direct role for zinc in removing ROS or free radicals has not been proven, it has been shown that dietary zinc deficiency is associated with oxidative damage.
- Zinc supplementation also reduces the incidence of infection, which is another factor that leads to telomere attrition by higher turnover of cells. Thus, it is possible that zinc may affect telomere length by influencing telomerase activity, DNA integrity, oxidative stress and susceptibility to infection.





Vitamins and nutritional supplements

FOLATE

- Association between plasma concentration of the B vitamin folate and telomere length has been reported in men and women.
- Folate plays an important role in maintenance of DNA integrity and DNA methylation, both of which influence telomere length.
- Accordingly, low nutritional status of folate results in short telomeres possibly due to DNA damage.
- According to the featured [study](#) in the *Journal of Nutritional Biochemistry*, plasma concentrations of the **B vitamin folate** correspond with telomere length in both men and women. Folate plays an important role in the maintenance of DNA integrity and DNA methylation, both of which influence the length of your telomeres.





Vitamins and nutritional supplements

OMEGA-3

- Plasma concentration of docosahexaenoic acid and eicosapentaenoic acid has been shown to be positively associated with reduced attrition of telomere length in study subjects over a period of 5–8 years.
- Individuals who had higher baseline omega-3 fatty acid concentration showed the maximum effect of omega-3 fatty acids on telomere attrition.
- Omega-3 fatty acids concentration in plasma is associated with low pro-inflammatory markers and high anti-inflammatory markers.
- A recent study at Ohio State University has found that **omega-3 supplements** protect telomeres from everyday damage. As a bonus, another study found that individuals taking omega-3 not only had longer telomeres, but also a reduction in inflammation.





Vitamins and nutritional supplements

CURCUMIN

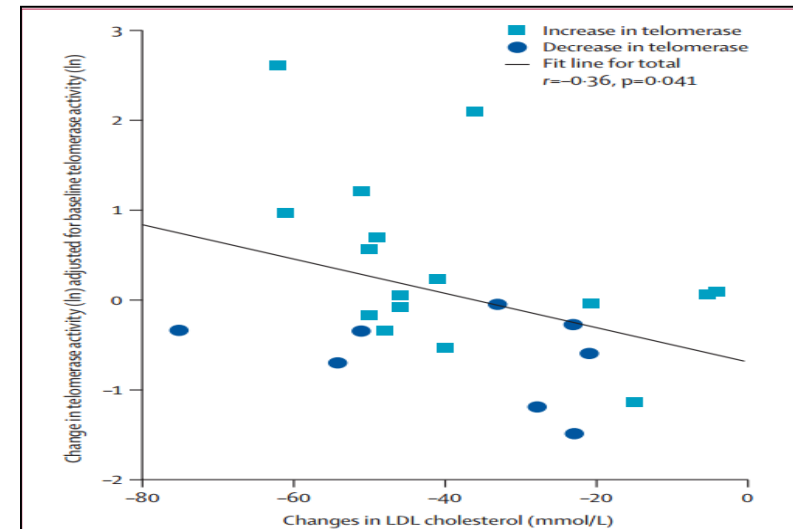
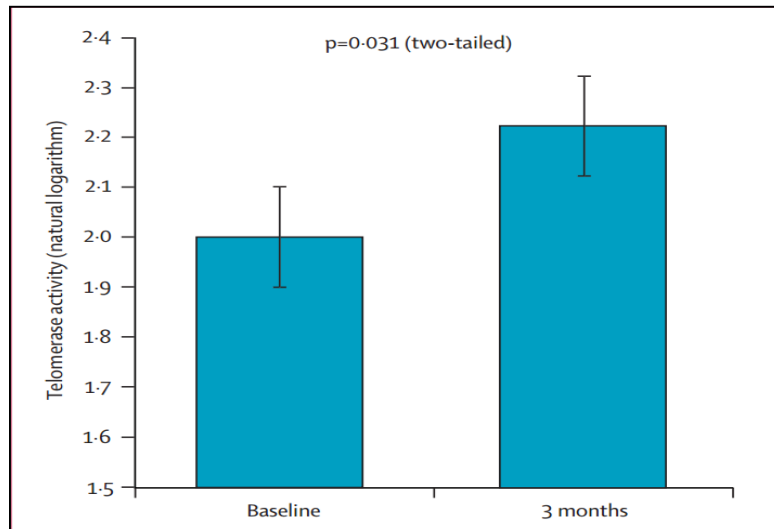
- Curcumin induces synthesis of the antioxidant glutathione and inhibits release of the chemokine interleukin-8 and activation of the nuclear transcription factor NF-kappa B that mediates inflammatory response.
- Mice that were fed diets containing curcumin showed decreased DNA damage and a trend for longer telomeres when compared to animals that were fed a control diet.





Increased telomerase activity and comprehensive lifestyle changes

- Telomerase is the enzyme responsible for maintaining telomere length. Lifestyle factors known to promote cancer and cardiovascular disease might also adversely affect telomerase function. This study assessed how three months of intensive lifestyle changes appeared to increase telomerase activity in peripheral blood mononuclear cells.

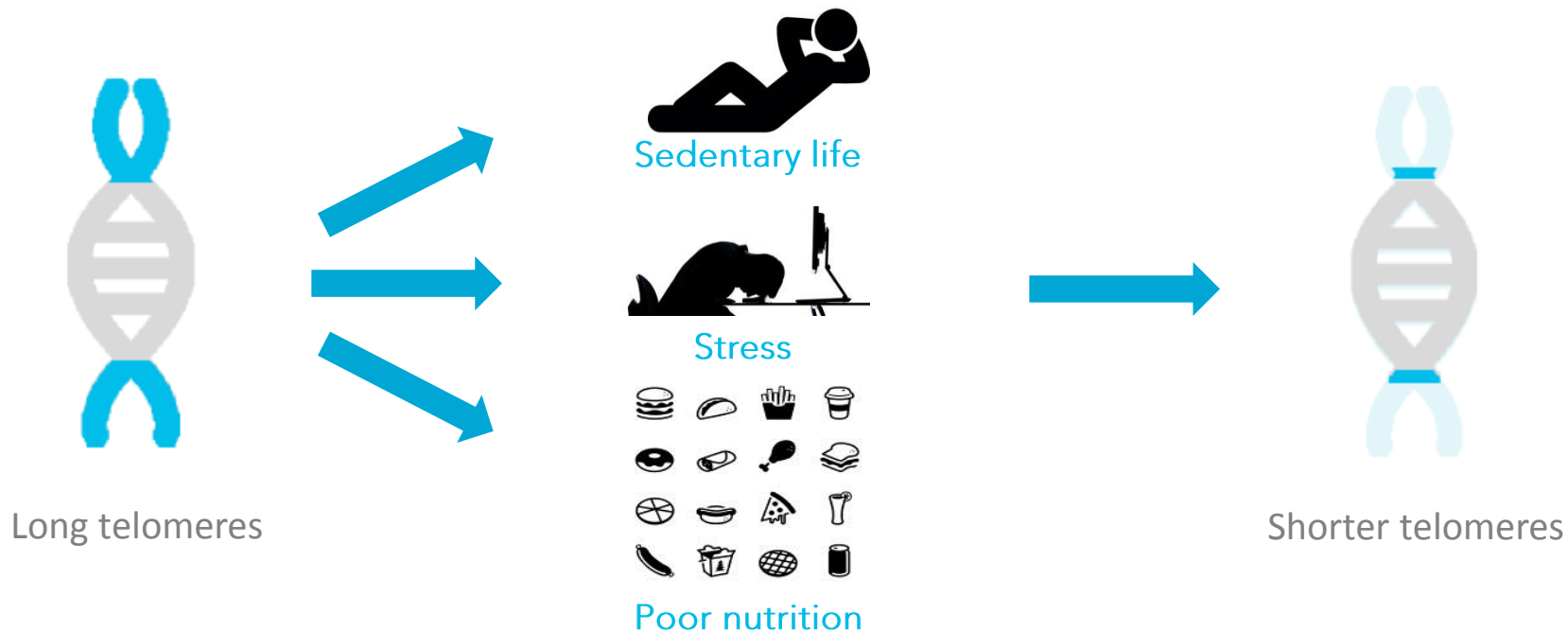


- While the study was limited in scope, its findings suggest that lifestyle modification may encourage telomerase expression and the lengthening of telomeres.



A comprehensive program is the best way to maintain healthy telomeres

- While today aging remains an inevitable process, there are many activities and things that have been shown to significantly reduce the loss of functionality that comes with time.
- By following the guidelines described, always under the supervision of a physician, you can seek to diminish the rate at which you age.





Continue your education online

- Visit our website: www.lifelength.com
 - In our website, you will find in our “classroom” Telomeres 101 extensive educational materials, presentations and references to clinical articles by pathology.
- The three links below are videos that further explain how to use TAT test and its clinical value and applications:



(Note: these videos are in the Life Length channel of YouTube)

- For more information: [Life Length Corporate Dropbox - Telomere Studies](#)



Advisory

- The following pages provide an overview of nutraceutical or supplements which purport to contribute to maintaining or lengthening telomeres.
- Life Length is not endorsing these products nor does it have any financial interest or agreement with any of these companies.
- Any physician or patient wishing to use these products should undertake their own research regarding their usage.
- Products listed in alphabetic order.



Supplements Index

Products

1. With Astragalus
2. With telomerase
3. Vitamin complexes



Contacts

Company	Product	Main component
Cenegenics	Rejuviant	Astragalus
DaVinci	Telomere Benefits	Astragalus
Dr. Dave's Best	Telomere Edge Packs	Astragalus
LifePlus Vitamins	Discovery	Astragalus
Medicinal Nutraceuticals	Maximum Telomere Support	Astragalus
NuVi	Telo Forte	Astragalus
Purity Products	Telo Boost	Astragalus
Swanson Vitamins	Rejuv	Astragalus



Contacts

Company	Product	Main component
TA Sciences	TA – 65	Astragalus
West Martin Nutrigenomics	TeloVite	Astragalus
Telomerance	Telomerance	Telomerase
Telomere boost	Telomere boost	Telomerase
Anti – Aging Ultra	Imortalium	Vitamin Complex
Isagenix	Product B	Vitamin Complex
Jeunesse	AM PM, Finiti	Vitamin Complex
Life Code	TeloMax	Vitamin Complex
Nuriss Skin Care and Wllness	Telomere DNA Youth Repair Cream	Vitamin Complex



Contacts

Company	Product	Main component
NuVi	Stem Forte	Vitamin Complex
Oleavine	Telos 95	Vitamin Complex
Premier Nutritionals International	Telezyme	Vitamin Complex
Primal Force	Telo – essence	Vitamin Complex
Reneuve	Reneuve	Vitamin Complex
SuperSmart	SuperSmart	Vitamin Complex
Telomere bioscience	Telo – 100	Vitamin Complex
Terraternal	Telomere Guard	Vitamin Complex

With astragalus



TA⁶⁵_{MD}

Directions: As a dietary supplement, take one (1) to four (4) capsules daily, or as advised by your health care practitioner.

Supplement Facts

Serving Size: 1 Vegetarian Capsule
Servings Per Container: 90

Amount Per Serving	% Daily Value
Astragalus Root Extract (TA65MD)	8 mg *

* Daily Value not established.

Other Ingredients: Hydroxypropyl methylcellulose, silicon dioxide, cellulose, and water.

Contains no yeast, dairy, eggs, gluten, corn, soy, wheat, sugar, starch, salt, preservatives, artificial color, flavor, or fragrances.

Warning: If you have or think you may have any serious disease, consult your health care practitioner before using this product. For adults only; not to be taken by people under 25 years of age.

± 1 mg TA-65MD is 31 units

Keep out of reach of children.
Store at 15-30°C (59-86°F).
Protect from heat, light and moisture.
Do not use if seal is broken.

geron US Patent No: 7,646,604
Under Exclusive License
From the Geron Corporation

FACTS

- Astragalus
- Noel Thomas Patton
- “It activates telomerase, an enzyme able to repair telomeres, repairing them and exerting a rejuvenating power”

Scientific Publications

A recent study was published in Rejuvenation Research



FACTS

- Astragalus
- “Rejuviant is designed to help achieve optimal health and longevity utilizing Cycloastragenol (derived from Astragalus Root)
- Daily Value not established

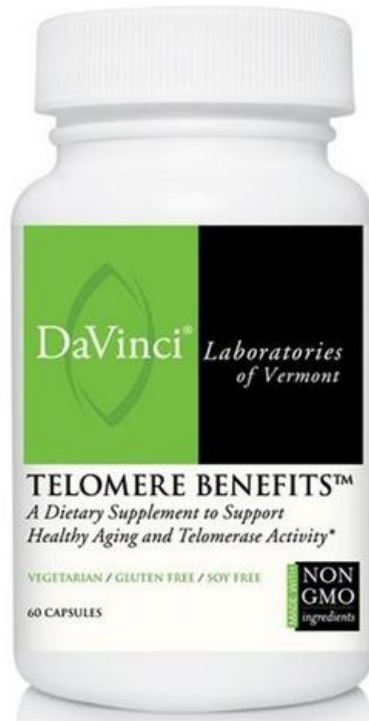
Supplement Facts

Serving Size: 1 Capsule
Servings Per Container: 30

	Amount Per Serving	%DV
Cycloastragenol (a 98% pure concentration of Astragalus Root)	7 mg	**

** Daily Value (DV) not established.

Other Ingredients: Microcrystalline cellulose, hydroxypropyl methylcellulose (HPMC), silicon dioxide, chitosan, magnesium stearate, enteric coating.



FACTS

- Astragalus
- “Telomere Benefits is a breakthrough product that features a standardized extract of Astragaloside IV (AG-IV). AG-IV supports the expression of the telomerase enzyme, which supports healthy DNA and telomere length, resulting in unparalleled aging support at the genetic level. ”
- Daily Value not established



Telomere Edge Packs

Dr. Dave's Best



FACTS

- Astragalus
- Maximum telomere health and slow down telomere loss
- Contains several supplements that have been reported to lengthen telomeres
- Daily Value not established

Supplement Facts (PM)		
Serving Size One Packet Servings Per Container 30		
Amount Per Serving	% Daily Value	
Vitamin D (Cholecalciferol)	2500 I.U.	625%
Vitamin E (Mixed Tocopherols)	15 I.U.	50%
Vitamin B6 (Pyridoxine HCL)	5 mg	250%
Folate (Folic Acid)	2 mcg	<1%
Vitamin B12 (Cyanocobalamin)	25 mcg	417%
Marine Lipid Concentrate	1200 mg	*
Eicosapentaenoic Acid, 720 mg		
Docosahexaenoic Acid, 480 mg		
Immortality Edge Proprietary Blend	1620 mg	*
Acetyl L-Carnitine, N-Acetyl L-Cysteine, Turmeric Extract (95% Curcumin), Hawthorne Berry Powder, Ginger Extract Powder 4:1, Mixed Tocotrienols, Rosemary Extract Powder 4:1		
*Daily Value (%DV) not established.		



FACTS

- High quality extract of the Astragalus root
- “Contributes to the longevity of stem cells”
- 1 cap/day

Supplement Facts

Serving Size	1 Capsule
Servings Per Container	30
Amount Per Serving	% Daily Value
Proprietary Blend	9 mg *
Astragalus Rhizome Extract	*
Cinnamon Bark Extract	*
Pomegranate Whole Fruit Extract	*
Ginger Root Extract	*
Quercetin Dihydrate	*

*Daily Value not established.



Maximum Telomere Support

Medicinal Nutraceuticals



FACTS

- Astragalus
- “Vitamin D and Astragaloside IV affects the chromosomes in a way that prolongs the cells ability to replicate itself healthfully”
- One or two capsules daily, preferably in between meals

Supplement Facts

Serving Size: 1 64 mg Capsule

Serving Per Container: 60

	Amount per Serving	% DV
Vitamin D (cholecalciferol)	2000 IU	500
Astragaloside IV	40 mg	†

† Daily Value not established.



Proprietary super blend, Goji Extract, Blueberry, Kino Tree, Alpha Lipoic Acid, Astragalous, Acai Extract, Milk Thistle Seed Extract, Turmeric Extract, Green Tea, Reishi Extract, Fo-ti, L-Carnosine, Pomegranate, Panax Ginseng, Royal Jelly, Astaxanthin, Resveratrol, Gotu-kola, DMAE, Rhodiola Extract, Black Pepper.

FACTS

- Astragalus
- Also as a coffee drink
- 2 caps/day
- Another product is Stem Forte



Suggested Use: As a dietary supplement, adults take 2 capsules daily with a meal, or take as directed by your health care professional. For the first 15 days, double the dose. Best results obtained with daily use.

Supplement Facts

Serving Size 2 Vegetarian Capsules
Servings Per Container 30

Amount Per Serving	% Daily Value	
Vitamin D (as Cholecalciferol)	1000 IU	250%
Folic Acid	400 mcg	100%
Vitamin B12 (Methylcobalamin)	25 mcg	417%
Green Tea Extract (leaf)	237 mg	†
Chlorella	200 mg	†
Astragalus (root)	57 mg	†
resVida® Resveratrol	30 mg	†
Grape Seed Extract	30 mg	†

† Daily Value not established.

Other Ingredients: HPMC, microcrystalline cellulose, and magnesium stearate.
resVida® is a registered trademark of DSM Nutritional Products.

FACTS

- Astragalus
- “Unique formula combining vitamins and nutraceuticals that help maintain healthy telomeres, the “end-caps” of DNA in cells”
- 2 cap/day



IMMORTAL TrifecTA



Supplement Facts

Serving Size: 6 ml daily (30 servings per bottle)

	Per Serv'g
Cycloastragenol	10mg
Acetyl-L-Carnitine	200mg
R-Alpha Lipoic Acid	70mg
Reservatol	10mg

Immortal Cell Sciences

FACTS

- Astragalus
- “TrifecTA improves the state of the art and encapsulates 3 other important rejuvenation substances recently discovered by anti-aging scientists. These are Acetyl-L-Carnitine, Alpha Lipoic Acid and Reseveratrol”



Swanson Vitamins



FACTS

- Astragalus
- Cyclocell Telomere Formula with Cycloastragenol and Astragaloside IV addresses what may be the root cause of aging at the cellular level
- 2 cap/day OR 4 cap/day

Supplement Facts

Serving Size 1 Veggie Capsule

	Amount Per Serving	% Daily Value
Astragaloside IV (from astragalus root)	5 mg	*
Cycloastragenol (from astragalus root)	5 mg	*



FACTS

- Astragalus
- Telomeres in health and disease
- 90 cap → 30 days
- Take one tablet, three times daily with breakfast, lunch and dinner. If you prefer, you may take two tablets two times daily.

Supplement Facts

Serving Size: 3 Tablets / Servings Per Container: 30

Amount Per Serving		% DV †
Vitamin A (as acetate, beta-carotene)	5,000 IU	100%
Vitamin C (as ascorbic acid, calcium ascorbate)	400 mg	667%
Vitamin D3 (as cholecalciferol)	2000 IU	500%
Vitamin E (as d-alpha tocopherol succinate and mixed tocopherols)	30 IU	100%
Vitamin K2 (as MK-7)	45 mcg	56%
Vitamin B1 (as thiamine HCl)	50 mg	3333%
Vitamin B2 (riboflavin)	50 mg	2941%
Niacin (as niacinamide)	100 mg	500%
Vitamin B6 (as pyridoxine HCl)	50 mg	2500%
Folic acid	400 mcg	100%
Vitamin B12 (as cyanocobalamin)	100 mcg	1667%
Biotin	300 mcg	100%
Pantothenic Acid (as calcium-d pantothenate)	50 mg	500%
Calcium (as carbonate, dibasic calcium phosphate, citrate, ascorbate)	220 mg	22%
Phosphorus (from dibasic calcium phosphate)	48 mg	5%
Iodine (as potassium iodide, kelp)	150 mcg	100%
Magnesium (as oxide, citrate)	100 mg	25%
Zinc (as amino acid chelate)	15 mg	100%
Selenium (as methylselenocysteine)	70 mcg	100%
Copper (as amino acid chelate)	2 mg	100%

Amount Per Serving		% DV †
Manganese (as amino acid chelate)	2 mcg	<1%
Chromium (as polynicotinate)	150 mcg	125%
Molybdenum (as sodium molybdate)	5 mcg	7%
Chloride (as potassium chloride)	72 mg	2%
Potassium (as potassium chloride)	80 mg	2%
Green Tea Leaf Extract Standardized to 90% polyphenols	250 mg	††
Chlorella (Chlorella vulgaris)	100 mg	††
Astragalus Membranaceus (providing polysaccharides 40 mg)	57 mg	††
L-Carnosine	50 mg	††
Resveratrol (providing 30 mg trans-resveratrol)	60 mg	††
Grape Seed Extract (85-95% OPC)	30 mg	††
Choline Bitartrate	25 mg	††
Inositol	25 mg	††
Silicon (as silicon dioxide)	2 mg	††
Lycopene	300 mcg	††
Lutein	250 mcg	††
Boron	150 mcg	††
Vanadium (as vanadyl sulfate)	10 mcg	††
Nickel (as nickel sulfate)	5 mcg	††

† Percentage Daily Value †† Daily Value not established

With Telomerase



FACTS

- Telomerance™ formula adds telomerase enzyme to your body in a readily available form.
- Porcine Thymus Gland extract, citrus oils, lemon juice, citric acid, grape seed extract, natural cranberry and raspberry flavors. No artificial colors, flavors or preservatives.



Telomere boost

Telomere boost



FACTS

- With telomerase enzyme extracts (porcine origin) and a proprietary peptide formula designed to support telomere activation.
- Sublingual absorption, the telomerase has a peptide for the translocation to the nucleus.

Vitamin Complex



Imortalium

Anti-Aging Ultra



Supplement Facts

Serving Size: 4 Bi-Layered Tablets
Servings per Container: 30

	Amount per Serving	%DV*
Vitamin A (as beta-carotene) §	5,000 IU	100%
Vitamin C (as ascorbic acid) §	120 mg	200%
Vitamin D3 (as cholecalciferol) §	400 IU	100%
Vitamin E (as d-alpha tocopheryl succinate) §	120 IU	400%
Vitamin K (as menaquinone-4 and menaquinone-7) §	40 mcg	50%
Vitamin B6 (as pyridoxine HCl) §	2 mg	100%
Zinc (as zinc citrate) §	7.5 mg	50%
Copper (as citrate) §	1 mg	50%
MSM (methylsulfonylmethane)	300 mg	*
Alpha-Lipoic Acid	300 mg	*
Telomere Support Blend §	200 mg	*
Trans Resveratrol §	125 mg	*
Full Spectrum Whole Food Blend §	200 mg	*
Fucoidan-Rich Algae Blend §	100 mg	*
Regeneryll™ Brand SOD §	35 IU**	*
Skin-Rejuvenating Whole Food Blend §	25 mg	*
Skin Defense Carotenoid Blend §	400 mcg	*

* Daily Value (DV) not established.

** SOD Activity

§ See product brochure for details.

OTHER INGREDIENTS: Microcrystalline cellulose, hydroxypropyl methylcellulose, stearic acid, vegetable cellulose, magnesium stearate, di-calcium phosphate, acacia gum, silica, pharmaceutical glaze.

FACTS

- “Promotes Telomere-Lengthening Enzyme Activity in Healthy Cells”.
- “Promotes Healthy Restriction and Reduction of Telomere Length in Unhealthy Cells”.



Product B

IsaGenix



Product B® IsaGenesis®

Supplement Facts

Serving Size: 2 Softgels
Servings per Container: 60

	Amount per Serving	% Daily Value
Vitamin A (beta carotene)	3333 IU	66%
Vitamin C (ascorbic acid)	13 mg	21%
Vitamin E (d-alpha tocopherol)	5 IU	16%
Vitamin B12 (cyanocobalamin and methylcobalamin)	12 mcg	200%
Proprietary Blend	1280 mg	†

Milk thistle (*Silybum marianum*) seed extract, flax (*Linum usitatissimum*) seed oil, phosphatidylcholine, turmeric (*Curcuma longa*) root extract, green tea (*Camellia sinensis*) leaf extract, giant knotweed (*Polygonum cuspidatum*) root extract, horny goat weed (*Epimedium sagittatum*) herb top extract, pomegranate (*Punica granatum*) fruit extract, ashwagandha (*Withania somnifera*) root extract, grape (*Vitis vinifera*) seed extract, boswellia (*Boswellia serrata*) gum resin extract, blueberry (*Vaccinium angustifolium*) fruit extract, N-acetyl-L-cysteine, bilberry (*Vaccinium myrtillus*) fruit extract, R-alpha lipoic acid, L-glutathione, Asian ginseng (*Panax ginseng*) root extract, bacopa (*Bacopa monnieri*) whole plant extract, raspberry (*Rubus idaeus*) fruit extract, canola lecithin, harada (*Terminalia chebula*) fruit extract, quercetin dihydrate, velvet bean (*Mucuna pruriens*) seed extract, maca (*Lepidium meyenii*) root extract, goldthread (*Coptis chinensis*) root extract, shilajit extract, acacia-thorn mimosa (*Acacia nilotica*) bark extract, black tea (*Camellia sinensis*) leaf extract, white tea (*C. sinensis*) leaf extract, proprietary carotenoid blend (lutein, lycopene, zeaxanthin, alpha carotene)

† Daily Value not established.

390BB02.717-00

FACTS

- “It is a powerful blend of complex botanicals and vitamins uniquely designed to offer superior telomere support for youthful aging. For optimal telomere benefits, take as part of your daily Isagenix nutritional system.”



AM PM, Finiti

Jeunesse



FACTS

- “These powerful dietary supplements effectively delay the symptoms of premature aging. AM Essentials™ contains energy-boosting nutrients that regulate mental clarity and focus. The PM Essentials™ formula balances and relaxes your body for a restful sleep”.
- Dr. Vincent Giampapa.
- Compounds not specified.



FACTS

- “TeloMax™ contains natural MuR herbal components that boost telomeres while slowing telomere loss due to damage that may be caused by inflammation, radiation, toxins, stress, disease or injury”.

TeloMax™ contains a synergistic mix of proprietary herbal extracts that support telomeres while helping to prevent telomere loss and damage.

TeloMax™ supports cardiovascular, hormonal and organ health by helping to maintain normal organ and tissue function.*

TeloMax™ is manufactured in a GMP facility. Visit us on the web at www.TeloMax.com

*These statements have not been evaluated by the Food and Drug Administration. This product is not intended to diagnose, treat, cure, or prevent any disease.



TeloMax™

- Telomere Support
- Organ Protection
- Hormone Balance

60 Capsules
Dietary Supplement

Supplement Facts

Serving size 2 capsules
Servings per container 30

	Amount Per Serving	%DV
Chromium (Ablon TRAACS)	240 mcg	200%
TX100™ Herbal extract blend	1320 mg	**
<small>Withania somnifera (root), Angelica sinensis (root), Crataegus oxyacantha (leaf), Silybum marianum (seed), Terminalia chebula (fruit), Genistein, Cistanche (root), Polygonum cuspidatum (root)</small>		

** Daily Values (DV) not established.

Other Ingredients: Vegetable capsule, silicon dioxide

Suggested Use: As a dietary supplement, take two capsules daily, preferably with a meal.

Manufactured for: Centagen,™ 637 S. Broadway St., Suite B-206, Boulder, CO 80305





Purified Water (Aqua), Squalene, Hyaluronic Acid, Caprylic/Capric Triglyceride, Teprenone, Polyacrylate 13, Polyisobutene, Polysorbate 20, Xylitylglucoside, Anhydroxylitol, Xylitol, Phenoxyethanol, Ethylhexylglycerin

FACTS

- TELOMERE DNA YOUTH REPAIR CREAM
- acts upon our skin cells to slow down this deterioration process. By rejuvenating the DNA that contributes to cellular formation, it assists in holding back the ravages of age and time.



FACTS

- Proprietary super blend, Grape seed skin and fruit Extract, Bovine Colostrum, Brown Seaweed, Kino Tree, Astaxantin, Beta Glucans, Green tea, Wakame Seaweed, Ashwagandha Extract, Fo-ti Extract, Blueberry Extract, Spirulina Powder, L-Arginine, Cordiceps, L-carnosine, Panax Ginseng, Resveratrol, Chlorella, L-citruline, Black Pepper. Sublingual absorption, the telomerase has a peptide for the traslocation to the nucleus.



Adult Dosage: As a dietary supplement take one (1) capsule daily with a meal.

Supplement Facts		
Serving Size: 1 Capsule		
Servings Per Container: 30		
	Amount Per Serving	% DV
Telos95™	65mg	†
(Highly purified Polyphenols isolated from Grapevine and Olive Leaf)		
† Daily Value not established		

Other Ingredients: Microcrystalline cellulose, magnesium stearate, veggie capsule.

Warning: Keep out of reach of children. If you are pregnant, nursing, or have a medical condition, consult your physician before taking this product.

FACTS

- Grapevine and olive leaf extracts with SIRT2 Protein.
- SIRT2 may regulate epigenetic gene silencing and suppress recombination of rDNA.
- Joy of Health have the same product, Telos 95

Premier Nutritionals International

Suggested Use
4 Capsules Daily (1 every 3 Hours).
Can be taken with or without meals.
Not recommended for individuals under the age of 21.

Caution: Do not use this product if safety seal on lid is broken prior to first use.

Keep out of reach of infant children.

*These statements have not been evaluated by the Food & Drug Administration. This product is not intended to diagnose, treat, cure or prevent any disease or illness.

 premier
Enriching Gifts International
Miles City, MT 59301
Comments: (406) 232-4414
www.telezyme.com

dietary supplement

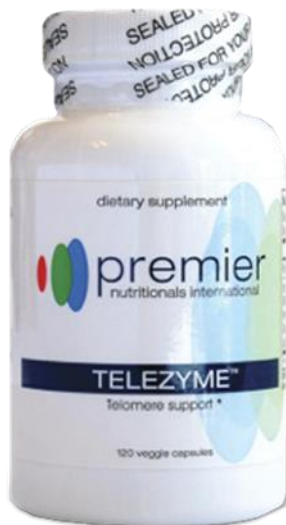
 premier
nutrionals international

TELEZYME™
longevity support

120 veggie capsules

Supplement Facts
Serving Size 1 Veggie Capsule
Servings per Bottle 120

	Amount Per Serving 100%
Proprietary Blend	400mg
Enzyme Enhanced Spirulina™ (Organic)*	
GRBCF-77™ Enzyme & Mineral Blend:	
Protease, Amylase, Ionic Minerals, Maltase, Cellulase, Lactase, Bromelain, Invertase, Lipase, Alpha Galactosidase	
<small>*Daily Values Not Established</small>	
<small>Other Ingredients: Veggie Capsule (vegetable based), Magnesium Stearate</small>	
Lot	Exp



FACTS

- “Now you can regenerate every cell in your body like you did when you were younger.”
- “TELEZYME™ is proven through independent testing to increase the length of the Telomere Caps on your DNA.”
- RONALD K. SCHNEIDER

Supplement Facts

Serving Size: 10.51 Grams (1 Scoop)
Servings Per Container: 30 (315.3 Grams)

	Amount Per Serving:	% Daily Value:
Vitamin D3	2,000 IU	500%
Vitamin C	1.5 g	2,500%
Vitamin B3 (98% Niacinamide, Nicotinamide)	20 mg	122%
Vitamin B6	50mg	312%
Vitamin B12 (1% Cyanocobalamin)	500 mcg	208%
Folic Acid	800 mcg	200%
Selenium (1% Se)	200 mcg	4%
Magnesium Citrate (providing 160mg)	1 g	46%
Amino Acid Proprietary Blend:	2 g	*
Alpha-Ketoglutarate		
Arginine		
Acetyl L-Carnitine		
N-Acetyl-Cysteine		
Carnosine		
Trimethylglycine	1 g	*
Asian Ginseng Std. to high levels of Ginsenosides (root)	200mg	*
Kudzu (<i>Pueraria lobata</i>) (root)	150 mg	*
Milk Thistle Extract (<i>Silybum marianum</i>) Std. to 80% Silymarin (seed)	100 mg	*
Horny Goat Weed Extract (<i>Epimedium sagittatum</i>) (aerial parts)	100 mg	*
Bacopa (Bacopa Monnieri) (Min. 20% Bacosides) (whole plant)	100 mg	*
Green Tea Ext (95% Polyphenol, 40% EGCG, 75% Catechins) (leaf)	100 mg	*
Cat's Claw 4:1	100 mg	*
Natural d-Mixed Tocotrienols (Tocomin®)	100 mg	*
Resveratrol (From Japanese Knotwood root) 50% trans-resveratrol	50 mg	*
pTerostilbene	50 mg	*
Fenugreek Extract (seed)	50 mg	*
Citrulline	50 mg	*
Mixed Tocotrienols (w/ Gamma)	30 mg	*
Ginkgo Extract (leaf)	30 mg	*
Gotu Kola (root)	30 mg	*
Ashwagandha (<i>Withania somnifera</i>) (root) powder	30 mg	*

Other Ingredients: Maltodextrin, Fructose, Lemon Flavor, Stevia.

FACTS

- "Slow down aging, while restoring the strength, energy and endurance of your youth by maintaining the health of your telomeres."
- Dr. Sears





Reneuve

Reneuve



FACTS

- “Nutritional supplement created through an advanced cellular enzyme extraction, purification, stabilization, and filtration process.”



SuperSmart Telomeres

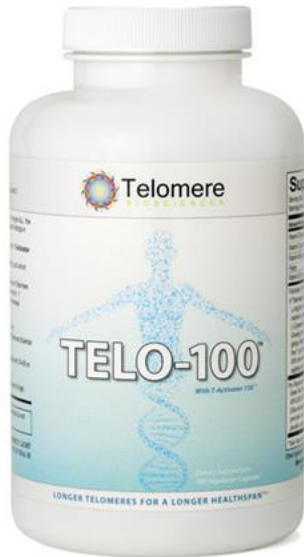
SuperSmart



FACTS

- “This formulation represents the only real ‘insurance’ currently available against telomere shortening. We recommend taking it alongside cycloastragenol and astragaloside IV as it complements and boosts the effect”.

Dose journalière : 2 capsules Nombre de doses par boîte : 30	Amount per dose
Magnesium ascorbyl phosphate	200 mg
L-carnosine	200 mg
Extract of <i>Terminalia chebula</i> standardised to 30 % tannins	150 mg
Extract of green tea standardised to 95 % polyphenols including 75 % catechins of which 45 % are EGCG	150 mg
Tocomax® (Extract of palm oil standardised to 11 % D-gamma-tocotrienols)	150 mg
Extract of purslane 10:1 (<i>Portulaca oleracea</i>)	100 mg
Other ingredients: microcrystalline cellulose, magnesium stearate (E572), silicon dioxide (E551). Tocomax®, Carotech, Malaysia.	



Supplement Facts		
Serving Size: 2 vegetarian capsules		
Servings Per Container: 60		
Amount Per Serving		% DV
Vitamin D3 (as cholecalciferol)	1,000 IU	250%
Vitamin E (as d-alpha tocopherols)	100 IU	333%
Vitamin B6 (as pyridoxal-5-phosphate)	100 mg	5000%
Folate	200 mcg	50%
Vitamin B12 (as methylcobalamin)	250 mcg	4167%
T-Activator 150™ is a Proprietary Blend of the following 10 "Telomerase-Activators":	1,015 mg	-
N-Acetyl L-Cysteine, L-Arginine Hydrochloride, Milk Thistle Extract (<i>Silybum marianum</i> , standardized to 80% silymarin) plus Siliphos® Milk Thistle Phytosome™ (<i>Silybum marianum</i> extract/Phosphatidylcholine complex), Bacopa Monnieri (min. 20% bacosides), Ashwagandha Root Extract (<i>Withania somnifera</i> , 2.5% withanolides), Panax Ginseng (min. 3% ginsenosides), Ginkgo Biloba (min. 24% ginkgo flavone glycosides, min. 6% terpenoid lactones, less than 1 ppm ginkgolic acid), Resveratrol (<i>Polygonum cuspidatum</i> , 50% trans-resveratrol), Horny Goat Weed (<i>Epimedium sagittatum</i> , min. 20% icarin), Vitamin D3 (as listed above)		
Pro-Telomere Proprietary Blend:	240 mg	-
Green Tea Extract (<i>Camellia sinensis</i> , min. 95% polyphenol, 40% EGCG, 75% Catechins, < 0.5% Caffeine), Hydroxytyrosol (<i>Olea europaea</i>), Pine Bark Extract (<i>Pinus pinaster</i> , french maritime pine bark, min. 65% procyanidins), Astaxanthin (<i>Haematococcus pluvialis</i> : natural marine algae)		
*Daily Value not established.		
Other Ingredients: Cellulose, Hydroxypropyl Methylcellulose, Water, Silicon Dioxide and Vegetable Magnesium Stearate		
Manufactured under cGMP Facility for: Telomere Biosciences™		
10 North Street, Cold Springs, NY 10516		

PRODUCT FACTS
Active Ingredients per 1 Chewable Tablet:

'Telomerase Activation Complex' 300 mg
A Proprietary Blend of the Following 8 'Telomerase-Activators' and Pro-Telomere Ingredients:
N-Acetyl L-Cysteine, Milk Thistle Extract (*Silybum marianum*, 80% Silymarin), Bacopa Monnieri (min. 20% bacosides), Panax Ginseng (min. 3% ginsenosides), Ginkgo Biloba (min. 24% ginkgo flavone glycosides, min. 6% terpenoid lactones), Ashwagandha Root Extract (*Withania somnifera*, 2.5% withanolides), Resveratrol (*Polygonum cuspidatum*, 50% Trans-resveratrol)
Cholecalciferol (Vitamin D3) **50 IU**

Inactive Ingredients:
Maltodextrin, Porcine Palatability Enhancer, Poultry Liver Powder, Rice Flour, Silicon Dioxide, Vegetable Stearic Acid

Manufactured in the U.S. for:
Telomere Biosciences, LLC.
10 North Street, Cold Spring, N.Y. 10516
www.TelomereBiosciences.com

Telomere bioscience

- ## FACTS
- “Made With T-Activator 150™, a Special Blend of 10 Natural Telomerase-Activating Compounds”.
 - TELO-20 for Dogs is the first integrated “complex” of 8 pro-Telomere nutritional ingredients for dogs.



Telomere Guard



	Cantidad por porción	
Acai Polvo (<i>freeze dried</i>)	100mg	
Ácido Ascórbico 2-Fosfato (<i>Asc2P</i>)	180mg	
Arándano en Polvo (<i>freeze dried</i>)	100mg	
Extracto de Hojas de Ginkgo Biloba	15mg	
Extracto de Semillas de Uva	35mg	
Extracto de Té Verde (<i>50% EGCG</i>)	10mg	
L-Carnosina	180mg	
Fruta Myrobalan en Polvo (<i>Terminalia Chebula</i>)	90mg	
N-Acetil L-Cisteína	110mg	
Fruta Verdolaga en Polvo (<i>Portulaca Oleracea</i>)	90mg	
Trimetiglicina (<i>TMG</i>)	145mg	
Vitamina B12 (<i>as cyanocobalamin</i>)	180mcg	3030%
Vitamina B2 (<i>as riboflavin</i>)	18mg	
Vitamina B6 (<i>as pyridoxine hcl</i>)	18mg	910%
Vitamina B9 (<i>as folic acid</i>)	300mcg	73%
Vitamina D3 (<i>as cholecalciferol</i>)	730 IU	182%
Vitamina E (<i>as d-alpha tocopherol</i>)	145 IU	484%
Vitamina E (<i>as mixed tocotrienols</i>)	90mg	

Terraternal

FACTS

- The new product is a combination of natural supplements, some common and some rare, that address these problems and have each been shown independently, either in vitro or in vivo, to significantly slow down telomere loss.



Selection of relevant clinical publications

(click on link to access the article)

- **General lifestyle**

Healthy lifestyle and leukocyte telomere length

Leukocyte telomere length is associated with cognitive performance in healthy women

- **Exercise**

Exercise modulates oxidative stress and inflammation in aging and cardiovascular diseases

The power of exercise: buffering the effect of chronic stress on telomere length

- **Nutrition**

Nutrition and lifestyle in healthy aging: the telomerase challenge

Body mass index and leukocyte telomere length dynamics among older adults

Higher serum vitamin D concentrations are associated with longer leukocyte telomere length in women

- **Vitamins and supplements**

Association between higher plasma lutein, zeaxanthin, and vitamin C concentrations and longer telomere length

Association of marine omega-3 fatty acid levels with telomeric aging in patients with coronary heart disease



LIFE LENGTH

www.lifelength.com
info@lifelength.com