1 **"ESSENTIAL" TRACE MINERALS**

Living Healthy: Session # C1-C2

2 **"ESSENTIAL" TRACE MINERALS**

These minerals are present
In the body, optimally, in
amounts totalling each approximately 1/100 of 1% (0.001) of your body's total weight. But, life would end without them.

3 **Trace Minerals**

- –Essential mineral nutrients found in the body in <5 g (micro-minerals). Required in minuscule quantities.
- –Food Source: Depend on soil and water composition and on how food are processed.
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- –Deficiency:
  - »Mild deficiencies are easy to overlook.
  - »Results of a deficiency is failure of children to grow and thrive.

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4 **Trace Minerals**

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- –Toxicities:
  - »Some are toxic at intakes not far above the estimated requirements.
- –Interactions:
  - »Common and often lead to nutrient imbalances, a slight manganese overload may aggravate an iron deficiency.

5 **The Trace Minerals**

6 **Trace Minerals**

1. Boron	2. Chromium
3. Zinc	4. Copper
5. Iron	6. Selenium
7. Silicon	8. Manganese
9. Iodine	10. Molybdenum
11. Vanadium	12. Strontium

7 **Other Trace Minerals**

Needed in very small amounts but essential for many enzymes

- Nickel
- Arsenic
- Fluoride
- Arsenic
- Nickel
- Cobalt

8 **1. BORON**

- Used in the production of natural steroids to facilitate bone and muscle growth.

- Necessary for the metabolism of calcium, phosphorus, and magnesium.

- Enhances brain function &
promotes alertness.

9 **1. BORON**

- Plays a role in the energy production of fats and sugars.

- Daily supplementing of 2 to 3 mg of boron can be helpful in the prevention of osteoporosis.

- It's deficiency can be a contributing factor to vitamin D deficiency.

10 **1. BORON**

DIET SOURCES
Boron food sources include: apples carrots grapes pears dark green leafy vegetables raw nuts & whole grains.

DOSAGE
Do not exceed 3 mg supplemental boron daily.

11 **2. CHROMIUM**

- Commonly called glucose tolerance factor or GTF, usually found in doses of 200 µg.
- It is one of the least understood trace minerals. It plays an essential role in adjusting the bodies use of blood sugar (glucose).
- Babies naturally have good stores of chromium. It diminishes with age!

12 **2. CHROMIUM**

- Pregnant mothers are at a greater risk for type two diabetes with each successive pregnancy since the fetus will deplete the mother chromium stores depriving her of sufficient GTF.

13 **2. CHROMIUM**

DEFICIENCY CONTRIBUTES

- A deficiency in chromium is well-established as a key contributing factor in type two diabetes, coronary artery disease and hypoglycaemia.
- The most common reasons for chromium deficiency are; lack of minerals in the soil, food processing, form of chromium in many foods not easily absorbed, not consuming enough foods that are good sources, consuming high sugars and refined carbohydrates.

14 **2. CHROMIUM**

DEFICIENCY CONTRIBUTES

- Chromium deficiency can also cause; anxiety, fatigue, poor metabolism of amino acids and

increase the risk of atherosclerosis.

15 **2. CHROMIUM**

SUPPLEMENTING CHROMIUM

- The best supplement forms:
  - chromium picolinate
  - chromium polynicotinate
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- Dosage: 200-400 mcg.

16 **2. CHROMIUM**

SOURCES OF CHROMIUM

Major Sources:

- beer, cheese, meat, brewers yeast, brown rice, and whole grains.

Minor Sources:

- dulse/kelp, eggs, chicken, mushrooms, potatoes, dairy products, blackstrap molasses, dried beans, corn and corn oil, Liver, and dried liver.

17 **2. CHROMIUM**

Herb sources

Catnip, licorice root, nettle, Yaro, sarsaparilla, spring horsetail, oat straw, red clover, and wild Yam.

18 **2. CHROMIUM**

NOTES

- Vigorous athletic activity with higher carbo consumption will require more chromium. Some small studies indicate that added chromium in the diet can reduce total body fat and increase muscle mass.
- Type two diabetics must monitor blood glucose levels when beginning chromium supplementation.

19 **3. ZINC**

- Is a co-enzyme to more enzymes in the body then any other mineral.
- There are more than 5000 enzymes in the body, zinc is the cofactor in at least 200 of them.
- It is a key component of the antioxidant enzyme super oxide dismutase, and is a component of insulin. Modern science has defined a balance of 10 to 1 ratio between zinc and copper to be optimum for health.
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20 **3. ZINC**

ROLE OF ZINC

- Proper concentration of vitamin E in the blood.
- Bodily use of vitamin A.
- Protein synthesis.
- Collagen formation.

- Prostate gland function.
- Growth of reproductive organs.
- A healthy immune system.

21 **3. ZINC**

ROLE OF ZINC

- Healing of wounds.
- Vital for born formation.
- Sensitivity of taste and smell.
- Regulating activity of oil glands.
- Protecting liver from chemical damage.
- Together with amino acid methionine, forms a potent antioxidant, zinc mono-methionine, sold as optizinc.

22 **3. ZINC**

DEFICIENCY CONTRIBUTES

- Thin fingernails
- growth impairment
- high cholesterol
- impaired night vision
- delayed sexual maturation
- slow wound healing
- susceptibility to infection
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23 **3. ZINC**

DEFICIENCY CONTRIBUTES

- propensity to diabetes, infertility
- Acne
- hair loss
- prostate trouble
- Impotency
- skin lesions, fatigue .

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24 **3. ZINC**

SOME FOOD SOURCES

- Brewers yeast, dulse and kelp, egg yolks, lima beans, mushrooms, sunflower seeds, whole grains, soy lecithin, pumpkin seeds, torula yeast, fish, Lamb, legumes, liver, meats, oysters, pecans, poultry, sardines, seafood.

25 **3. ZINC**

HERB SOURCES

- alfalfa, hops, burdock root, Cheyenne, nettle, fennel seed, camomile, dandelion, sarsaparilla, chickweed, mullein, milk thistle, eyebright, parsley, rosehips, skullcap, wild yam, and sage.

26 **3. ZINC**

HOW ZINC IS DEPLETED

- Zinc level may be depleted by:
  Diarrhea, kidney disease, diabetes, heavy perspiration, high fibre, cirrhosis of the liver .

ZINC INTERACTION

Iron supplements will interfere with zinc and likely neither will be absorbed.

27 **3. ZINC**

DOSAGE & SUPPLEMENTS

- Recommended dose; 15 mg with each meal. Maximum from all sources should not exceed 100 mg daily.
- Take them at different times.
- Together with amino acid methionine, forms a potent antioxidant, zinc mono-methionine, sold as optizinc.
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28 **4. COPPER**

- As an essential trace mineral, it is often overlooked as a deficiency in illnesses . even mild deficiency impairs white blood cells ability to fight infection
- It is also an important co-enzyme in several enzyme functions and to metabolise essential fatty acids

29 **4. COPPER**

- As the third most abundant trace mineral in the body
- It is important in the production of myelin, the protective sheath covering our nerves and is an important part of the collagen-elastin complex that gives arteries their flexibility.
- The greatest concentration is found in the brain and in the liver.
  .
-

30 **4. COPPER**

ROLE OF COPPER

. The formation of bone
- The production of haemoglobin and red blood cells
- The healing process
- Energy production
- Hair and skin colouring
- Taste sensitivity
- Joint connective tissue

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31 **4. COPPER**

DOSAGE & SYNERGY WITH OTHER SUPPLEMENTS

- Copper needs to work together with zinc and vitamin C to be effective.
- Recommended dose is 1.5 to 3 mg daily. mono-methionine, sold as optizinc.
- 10 mg is toxic, 60 mg will cause vomiting and serious dehydration
-

32 **4. COPPER**

EXCESSIVE DOSAGE

Excessive intake can cause toxicity which can cause;

- Anaemia, baldness, diarrhea, general weakness, skin disorders, impaired immunity,

increased LDL/decreased HDL, impaired respiratory function.
- Depression, irritability, nervousness, nausea and vomiting, joint and muscle pain and general weakness.

-

33 **4. COPPER**

EXCESSIVE DOSAGE
- body copper levels are reduced if excessive zinc and/or vitamin C is consumed.
- Excessive copper intake can be harmful to the eyes.
- Copper, iron, zinc and calcium need to be in balance if eye problems

34 **4. COPPER**

DEFICIENCY SYMPTOMS
- Anaemia, baldness, diarrhea, general weakness, skin sores, impaired immunity, increased LDL / decreased HDL, impaired respiratory function.

35 **4. COPPER**

FOOD SOURCES
- Avocados, Barley, beans, beets, broccoli, garlic, lentils, liver, oats, oranges, radishes, raisins, salmon and sea food, soybeans, back strap molasses, green leafy vegetables, mushrooms, almonds and pecans.

36 **5. IRON**
- Found in the largest concentration in blood as the oxygen carrying part of haemoglobin and of myoglobin, which performs the same function in muscle.
- In this regard it plays an important role in growth, the immune system and for energy production as well as cellular metabolism including DNA synthesis

37 **5. IRON**

DEFICIENCY SYMPTOMS called anaemia

Paleness, irritability, headaches, heartburn, hair loss, nervousness, obesity, fatigue, dizziness, loss of appetite, sore tongue, difficulty swallowing, digestive disturbances, fragile bones, slowed mental reactions, spoon shaped or ridged nails and heart palpitations .
Women who menstruate heavily (or for prolonged periods) are particularly at risk.

38 **5. IRON**

Excessive buildup of iron (haemochromatosis)
in he tissue can be associated with a rare condition, usually in men, a hereditary metabolic disorder. It causes excessive absorption of Iron from both food and/or supplements leading to;
Arthritis, diabetes, heart disorders, cirrhosis of the liver, bronze skin pigmentation, free radical damage to LDL lining the arteries or even direct damage to the artery walls .

39 **5. IRON**

Iron Supplement
NB unless you are diagnosed as Anemic, you should not take iron supplements. If you choose a multi-vitamin, be sure it does not include iron.

If you need an iron supplement, choose an organic form such as gluconate or fumarate, and take it away from vitamin E.

Inorganic forms such as ferrous sulphate can oxidize vitamin E as well as other elements and tissues.

40 **5. IRON**

Iron Supplement

Iron absorption can also be blocked if you have rheumatoid arthritis or cancer and to a lesser degree with chronic herpes and candidiasis.

NOTES:

1. Do not take supplemental iron if you have an infection. Bacteria thrive on Iron!
2. Take calcium supplements away from foods or supplements containing Iron.

41 **5. IRON**

Iron FOOD Sources

Major Sources

Beef liver, roast beef, ground beef, soybeans, dried apricots, back strap molasses, dried lima beans, sunflower seeds, dark turkey meat and dried kidney beans.

42 **5. IRON**

Iron FOOD Sources

Minor Sources

Raw broccoli, slivered almonds, brewers yeast, light turkey meat, Raw chopped spinach, white chicken meat, fresh or cooked peas, cooked beet greens, raisins, haddock, cod, prunes, endive or escargot, green leafy vegetables, whole grains, eggs, fish, almonds, avocados, dates, dulse/kelp, lentils, millet, pumpkins, rice and wheat bran.

43 **5. IRON**

Iron FOOD Sources

Herb Sources

Alfalfa, catnip, Cheyenne, chicory, Dong Quai, eyebright, kelp, licorice, nettle, mullein, paprika, parsley, plantain, rosehips, uva ursi, burdock root, camomile, chickweed, dandelion, fennel seed, fenugreek, Spring horsetail, lemongrass, milk thistle seed, oatstraw, peppermint, raspberry leaf, sarsaparilla, shepherds purse, yellow dock.

44 **6. SELENIUM**

Protective functions in the body.

1. As a key component of the enzyme Glutathione peroxidase, it blocks the free radical damage to lipids and together with vitamin E, is considered a potent antioxidant.

45 **6. SELENIUM**

2. It has been shown to increase the effectiveness of specific anti Cancer white cells.

Additionally, it is shown to:

– Protect the liver of people with alcoholic cirrhosis

– Regulate the effects of thyroid hormones on fat metabolism

46 **6. SELENIUM**

– Increase both the red and white blood cell count in AIDS patients
-Together with vitamin E and zinc, provide relief from enlarged prostate
- enhance pancreatic function
- Improve tissue elasticity

47 **6. SELENIUM**

– Help prevent lung, prostate and colorectal cancer
– Help maintain a healthy heart and liver
- Protect against cataracts
– Appears to protect against heart attack and stroke.

48 **6. SELENIUM**

Dosage
Most studies have used 200 µg/day. Do not exceed 400 µg/day unless advised by a health practitioner.

49 **6. SELENIUM**

FOOD Sources
Much North American farmland soil is deficient in selenium

Fish, meat, chicken, kelp/dulse, liver, Brazil nuts, brewers yeast, brown rice, dairy products, seafood, broccoli, garlic, onions, molasses, vegetables, wheat germ, whole grains

50 **6. SELENIUM**

Herb Sources
alfalfa, cayenne, hops, nettle, parsley , ginseng,
uva ursi, Yarrow, burdock root, camomile, horse tail, Fennel Seed, Hawthorne Berry, lemongrass, milk thistle, raspberry leaf, catnip, chickweed, fenugreek, oatstraw, peppermint, sarsaparilla, rosehips, and yellow dock.

51 **7. SILICON**

It is the second most abundant element on the planet, oxygen is first.
Why Necessary
- For the production of collagen in bones and skin and all connective tissues
- For calcium absorption in childhood bone formation
- To maintain flexible arteries and plays a major role in preventing cardiovascular disease

52 **7. SILICON**

Why Necessary
- counteracts the effects of aluminium on the body and brain and helps prevent Alzheimer's disease
- To prevent osteoporosis.

53 **7. SILICON**

Food Sources
All tubers, beets, soybeans, bell peppers, brown rice, whole grains, leafy green vegetables, and apples .

Herb Sources
mature alfalfa and Spring horsetail.

54 **7. SILICON**

Miscellaneous
Spring water varies in content of silicon dioxide (SiO2).

Look for boron, calcium, magnesium, manganese and potassium aid in the efficient use of silicone.

55 **8. MANGANESE**

Required in only minute amounts, yet is a key co-enzyme in some of the most important processes of the body including energy production in the mitochondria.
It is needed for the production of many other enzymes including the antioxidant enzyme superoxide dismutase (SOD), the production of which diminishes as we age.
Supplemental prophylactic dose is 2 to 5 mg per day.

56 **8. MANGANESE**

Manganese is used in:
- the effective functioning of the B complex Vits
- Protein and fat metabolism
- A healthy immune system
- Blood sugar regulation
- Normal bone grow

57 **8. MANGANESE**

Manganese is used in:
- The reproductive system
- A proper functioning nervous system
- The formation of cartilage and joint synovial lubricating fluid
- The formation of mothers milk
- It is a contributing factor in preventing cardiovascular disease, including high BP, atherosclerosis and high cholesterol. Manganese deficiency is extremely rare.

58 **8. MANGANESE**

Food Sources
Major: nuts and seeds, avocados, seaweed and whole grains, blueberries,

Minor: Egg yolks, legumes, dried peas, pineapples and green leafy vegetables.

59 **8. MANGANESE**

Herb Sources
Alfalfa, catnip, hops, parsley , raspberry, rosehips, wild yam, eyebright, ginseng, Yaro, burdock root, camomile, chickweed, fennel seed, fenugreek, dandelion, Spring horsetail, lemongrass, peppermint, red clover, yellow dock and mullein.

60 **9. IODINE**

Almost all Iodine intake goes to the thyroid gland to make the hormone thyroxine, which is 65% Iodine.

This in turn;
- Helps convert carotene to vitamin A
- Helps to synthesise protein
- Plays a key role in carbohydrate metabolism.

Iodine is important for both physical and mental development. Its deficiency is the cause of goitre, this is now rare.
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61 **9. IODINE**

Food Sources
All ocean fish, seafood and Kelp/dulse.
Sea salt, garlic, soybeans, spinach, asparagus, lima beans, mushrooms, sesame seeds, summer squash, Swiss chard, and turnip greens.

When eaten RAW in "LARGE" amounts, the following foods can block iodine from entering the thyroid:
Brussel sprouts, kale, cauliflower, peaches, pears, spinach and turnips.
Cooking fixes the problem.
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62 **10. MOLYBDENUM**

Is found in small amounts in every cell and tissue of the body and is a co-enzyme to many important bodily functions.
It plays a role in nitrogen metabolism and helps produce Uric acid as part of normal cell function.
As part of a special enzyme, Xanthine oxidise:
- It mobilises Iron stores from the liver to be used in haemoglobin to carry oxygen to the cells.

63 **10. MOLYBDENUM**

- It "cleans up" trace nitrogen from protein metabolism and converts it into Uric acid to be excreted.
- Measurable amounts of molybdenum are found in the liver, bones and kidneys.

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64 **10. MOLYBDENUM**

Food Sources
Meats, grains, beans/peas, dark green vegetables.

Molybdenum deficiency is rarely reported, therefore supplementation is not recommended. If used, should not exceed 350 µg per day.

An excess can cause a copper deficiency.

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65 **11. VANADIUM**

Role of Vanadium
- Growth hormones and reproduction
- Glucose metabolism (GTF: Glucose Tolerance Factor)
- Inhibiting cholesterol synthesis
- Cellular metabolism
- The formation of bones and teeth.

66 **11. VANADIUM**

Role Vanadium
- It is thought that its deficiency may be linked to cardiovascular and kidney disease, and increased infant mortality. There is, as yet, no consensus amongst scientists as to its validity as being "essential".

67 **11. VANADIUM**

Food Sources
Dill, fish, meat, olives, radishes, snap peas, whole grains, seafood and vegetable oils.

Supplements and Dosage
While it is estimated that our daily requirement of 100 to 300 µg is easily obtained from food, it is also available in 2 supplement forms:
- Vanadyl sulphate 10 and 100 mg
- bismalto-lacto-oxo – vanadium 1-5 mg (BMOV).

68 **12. STRONTIUM**

While it is not yet classified as an " essential" trace mineral, there is a growing consensus among scientists that it should be.

This opinion echoed by Dr Stanley Skoryna, director of medical research at Saint Mary's hospital in Montréal, was responsible for more research on strontium then any other scientist until the end of the 20th-century.

69 **12. STRONTIUM**

During that period in his research he established mounting evidence that it played a role in protecting the mitochondria from damage. Chemically similar to calcium, it can perform some of the same functions of bone structure.

During this first decade of the 21st century, more scientists have joined in to study this promising trace mineral with some enlightening results.

70 **12. STRONTIUM**

Unlike anti-resorption prescription medications that slow down bone loss and are often arduous to the upper gastrointestinal system, strontium appears to reduce osteoclasts and increase osteoblastic activity, speeding the formation of new bone. By taking strontium one hour before meals or two hours after and not together with calcium since they use the same metabolic pathways.

To treat osteoporosis, several supplement companies now make a product called strontium or strontium support II. None have any side-effects..

71 **Learning Guide to Classic Books**

A Learning Guide provides:

► Synopsis of the book and its Author
► What Others Say About the Book
► Quotes from the Book
► Key Insights from the Book
► Discussion Points
► Full text of the Book or short summary of the book
► Audio recording (if available) .

The following learning Guides are published by the Life Transformation Institute and available at http://tiny.cc/bookguides

- Learning Guide - *As a Man Thinketh* by James Allen
- Learning Guide - *The Prophet* by Kahlil Gibran
- Learning Guide - *Secrets of Millionaire's* Mind by Harv Ecker
- Learning Guide - *Thoughts Are Things* by Prentice Milford (TAB)

72 **Hand-out of Healthy Living Presentations**

This presentation
http://tinyURL.com/t-minerals

Previous presentations

- Digestive System (B5): http://tiny.cc/digestives

- Managing Stress (B6): http://tiny.cc/managingstress

73 **Resources**

Life Transformation Institute's website
http://tiny.cc/healthresources
- Glossaries (Health, Heart, Heart Diseases)
- List of Health Magazines, Books
- Articles, Presentations ... more

Appendices of Book: "7 Steps to Dental Health"
http://7stepsdentalhealth.com
- Health Websites
- Health Organizations
- Glossary of Holistic and Dental Terms
- Dental Knowledge Test

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