WELCOME!

- Training for Dietitians in Integrative and Functional Medicine
- Integrative Nutritionists
- Functional Nutritionists

The future of dietetics and nutrition therapy

Chronic Disease pathophysiology

80%

W.H.O.~ Chronic Disease

- 63% of deaths worldwide
- 25% under 60 years old (premature deaths)

- Obesity
- Inflammation
- Heart Disease
- Cancer
- Autoimmune
- Neurological
- Reproductive
- Pain

W.H.O.~ Chronic Disease

- 63% of deaths worldwide
- 25% under 60 years old (premature deaths)
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The future of dietetics and nutrition therapy

Chronic Disease Pathophysiology
- 80%
  - Obesity
  - Inflammation
  - Heart Disease
  - Cancer
  - Autoimmune
  - Neurological
  - Reproductive
  - Pain

WHO
- 63% of deaths worldwide
- 25% under 60 years old (premature deaths)

MOST PREVENTABLE
ALL DIET AND NUTRITION-RELATED
WELCOME!

- Training for Dietitians in Integrative and Functional Medicine
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~

The future of dietetics and nutrition therapy

Chronic Disease pathophysiology

Biochemical Individuality GENOMICS

- Functional Labs
- Genotype /genomics
- Beliefs
- Lifestyle
- Community
WELCOME!

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~ The future of dietetics and nutrition therapy

1. Chronic Disease Pathophysiology
2. Biochemical Individuality
3. Dietary Supplements

- 80% US Pop < RDA Mg
- Long-latency Nutritional Insufficiencies
- Vitamin D deficiency related to almost all chronic diseases
- Triage nutrient utilization
**WELCOME!**

- Training for Dietitians in Integrative and Functional Medicine
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~

*The future of dietetics and nutrition therapy*

---

**Nutrition Physical Exam**

- SKIN
- FACE
- TONGUE, ORAL CAVITY
- POSTURE
- VITALITY

---

**Chronic Disease Pathophysiology**

---

**Biochemical Individuality**

---

**Dietary Supplements**

---

**Nutrition Physical Exam**
nutritional physiology is all about **structure** and **function**: a novel view of assessment
Key Message 1

“Nutrient influences on both Structure and Function play important roles in nutrition assessment”
Key Message 2

“structure produces function”

“poor structure produces dysfunction”
Objectives

1) Distinguish between the structural and functional roles of nutrients in assessing nutrition status of an individual.

2) Examine two assessment tools used to identify basic structural and functional nutrient alterations of metabolism.

3) Observe a case study application of metabolic structure and function in nutrition assessment.
structure

a. The **arrangement** or **formation** of the tissues, organs, or other parts of an organism.

b. An organ or other part of an organism.

http://www.thefreedictionary.com/structure
function

The **physiological activity** of an organ or body part.

http://www.thefreedictionary.com/structure
Retelling the Patient’s Story

Antecedents

Triggering Events

Mediators/Perpetuators

Assimilation

Defense & Repair

Structural Integrity

Communication

Spirtual

Transport

Energy

Biotransformation & Elimination

Mental

Emotional

Physiology and Function: Organizing the Patient’s Clinical Imbalances

Personalizing Lifestyle Factors

Sleep & Relaxation | Exercise & Movement | Nutrition & Hydration | Stress & Resilience | Relationships & Networks

Name: ___________________________ Date: __________ CC: ___________________________
Structure

- membranes
- barriers
- skeletal
- energetic matrix
- hormones
- proteins
Neuronal Metabolism

- Neuronal Structure
- Neuronal Function

~Neurons functioning~
Transferring messages electrochemically to muscles and glands

Dual Palmitoylation of NR2 Subunits Regulates NMDA Receptor Trafficking

Neuron
Neuron synapses
Neuronal Metabolism

- LIPID STRUCTURES
- LIPID FUNCTION

### Functional & Structural Lipid Nutrition

- **FATS**
  - Omega 3
  - Omega 6 (AA, GLA, DGLA)
  - Omega 9
  - Beneficial Saturated Fats
  - [absence of damaged fats]
- Phospholipids: Phosphatidylcholine
- Bile function
- Biotin, Carnitine, etc.
Case Study 66 year old man
Dx: Alzheimer’s

- Brain 70-80% FAT
- Beta Amyloid plaque (rigidity of brain tissue)
- Sugar inducer
- “Diabetes Type 3”

Inflammatory molecules
PUT THE FIRE OUT!!
Case Study: 67 year old man
Dx: Alzheimer’s

Initial Signs & Symptoms
- Non-communicative, severe short memory
- Diet: ½ gal Pepsi regular daily – no water
- Diet: 2 sweet desserts daily, meat & potatoes
- BM 1 x weekly
- Thyroid Cancer history – 6 of 7 siblings cancer
- Recessive hemochromatosis
- Driver’s License revoked
Case Study 67 year old man
Dx: Alzheimer’s

Functional Nutrition Plan

- **First 2 months: IV Glutathione alternating with PC**
- Stop ½ gal Pepsi reg daily replace with unsweet tea
- **Low Simple Sugar Diet with beneficial fats**
- Resveratrol double dose
- **MVI-copper/iron-free**
- 5-MTHF (activated folate)
- **BM 1-2 x daily**
- PC (phosphatidylcholine) 5 caps BID
Case Study 67

Year old man
Dx: Alzheimer’s

Brain plasticity in action!

Change the structure to produce good function!
Structure

- membranes
- barriers
- skeletal
- energetic matrix
- hormones
- proteins

Gastrointestinal Barrier

Kirschner, N, et al. Tight junctions and differentiation – a chicken or the egg question? Experimental Dermatology Volume 21, Issue 3, Article first published online: 1 MAR 2012
“MICROBIOME” – microflora community

GUT – influence GALT – 70% lymphoid tissue (immune system)
  -- influence on weight management
  -- influence on cancer phenotype

SKIN – barrier protection – major influence on vulnerability to skin atopy

ORAL - hi association periodontal health
  - influence entire GI tract microflora

NASAL – influence vulnerability to inhalant sensitivities, allergies and infections

UROGENITAL – barrier protection to bladder and vagina – influence vulnerability to infection, allergy, sensitivity (eg., IC, chemicals)
Gut-brain-Microbiota Communication

Communication between gastrointestinal bacteria and the nervous system

Current Opinion in Pharmacology Volume 12, Issue 6 2012 667 - 672

http://dx.doi.org/10.1016/j.coph.2012.09.010
Structure

- membranes
- barriers
- skeletal
- energetic matrix
- hormones
- proteins

Blood Brain Barrier
Structure

- membranes
- barriers
- skeletal
- energetic matrix
- hormones
- proteins

Structure

- membranes
- barriers
- skeletal
- energetic matrix
- hormones
- proteins

Kirschner, N, et al. Tight junctions and differentiation – a chicken or the egg question? Experimental Dermatology Volume 21, Issue 3, Article first published online: 1 MAR 2012
Sustained skin barrier defect

SKIN SIGNS OF OXIDATIVE STRESS
SKIN SIGNS OF OXIDATIVE STRESS

6 weeks later
Currently, finding alternatives to antibiotics for skin treatment is receiving a lot of interest in research. It has been found that, similarly to the gut microflora, the skin's microbiota plays a beneficial role. Thus, the possibility to modulate the microbiota more selectively is highly interesting.

According to Schouten et al., a prebiotic diet caused reduced acute allergic skin response in recipient mice.

EFAs are essential for the synthesis of tissue lipids, play an important role in the regulation of cholesterol levels and are precursors of prostaglandins.

In the skin, CoQ10 is mainly to be found in the epidermis where it acts in combination with other enzymic and non-enzymic substances as the initial barrier to oxidant assault. Primary dietary sources of CoQ10 include oily fish (such as salmon and tuna), organ meats (such as liver), and whole grains. The amount of CoQ10 needed in human organism can be gained through a balanced diet, however in the market CoQ10 is available in several forms as a supplement,
Skin has been reported to reflect the general inner-health status and aging. Nutrition and its reflection on skin has always been an interesting topic for scientists and physicians throughout the centuries worldwide.

Schagen SK, et al. Discovering the link between nutrition and skin aging. Dermatoendocrinol. 2012 Jul 1;4(3):298-307. Departments of Dermatology, Venereology, Allergology and Immunology, Dessau Medical Center; Dessau, Germany.


Botanical anti-oxidants

Intriguingly, all natural plant-derived polyphenols like EGCG, resveratrol, curcumin, genestin and others are natural inhibitors of mTORC1, recently described in this journal. Natural polyphenols exert their major metabolic activity as mTORC1 inhibitors, a fundamental aspect relating calorie restriction and/or nutrient-derived mTORC1 attenuation to deceleration of aging.

Schagen SK, et al. Discovering the link between nutrition and skin aging. Dermatoendocrinol. 2012 Jul 1;4(3):298-307. Departments of Dermatology, Venereology, Allergology and Immunology, Dessau Medical Center; Dessau, Germany.
Calorie Restriction

It is widely accepted that caloric restriction (CR), without malnutrition, delays the onset of aging and extends lifespan in diverse animal models including yeast, worms, flies, and laboratory rodents. Although the underlying mechanisms remain still unknown, some explanations such as alterations of hormone metabolism, hormone-related cellular signaling, oxidation status, DNA repair, apoptosis, and oncogene expression, have been postulated.

Schagen SK, et al. Discovering the link between nutrition and skin aging. Dermatoendocrinol. 2012 Jul 1;4(3):298-307. Departments of Dermatology, Venereology, Allergology and Immunology, Dessau Medical Center; Dessau, Germany.
Structure ~ skeletal

- membranes
- barriers
- skeletal
- energetic matrix
- hormones
- proteins
<table>
<thead>
<tr>
<th>Vertebrae</th>
<th>Organs &amp; Organs</th>
<th>Conditions - High Blood Pressure</th>
</tr>
</thead>
<tbody>
<tr>
<td>C7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>T1</td>
<td>Arms * Esophagus</td>
<td>Wrist, Hand and Finger</td>
</tr>
<tr>
<td>T2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>T3</td>
<td>Heart * Lungs * Chest</td>
<td>Numbness or Pain * Middle Back</td>
</tr>
<tr>
<td>T4</td>
<td>Larynx * Trachea</td>
<td>Pain * Congestion * Difficulty</td>
</tr>
<tr>
<td>T5</td>
<td>Gallbladder * Liver</td>
<td>Breathing * Asthma * High Blood Pressure</td>
</tr>
<tr>
<td>T6</td>
<td>Diaphragm * Stomach</td>
<td></td>
</tr>
<tr>
<td>T7</td>
<td>Pancreas * Spleen</td>
<td></td>
</tr>
<tr>
<td>T8</td>
<td>Kidneys * Small Intestine</td>
<td></td>
</tr>
<tr>
<td>T9</td>
<td>Appendix * Adrenals</td>
<td></td>
</tr>
<tr>
<td>T10</td>
<td>Small Intestines * Colon * Uterus</td>
<td></td>
</tr>
<tr>
<td>T11</td>
<td>Uterus * Colon * Buttocks</td>
<td></td>
</tr>
<tr>
<td>L1</td>
<td>Large Intestines</td>
<td>Constipation * Colitis * Diarrhea</td>
</tr>
<tr>
<td>L2</td>
<td>Buttocks * Groin</td>
<td>Gas Pain * Irritable Bowel</td>
</tr>
<tr>
<td>L3</td>
<td>Reproductive Organs</td>
<td>Bladder Problems * Menstrual Problems</td>
</tr>
<tr>
<td>L4</td>
<td>Colon * Thighs * Knees</td>
<td>Low Back Pain</td>
</tr>
<tr>
<td>L5</td>
<td>Legs * Feet</td>
<td>Pain or Numbness in Legs</td>
</tr>
<tr>
<td>SACRAL</td>
<td>Buttocks * Reproductive Organs * Bladder</td>
<td>Constipation * Diarrhea * Bladder Problems</td>
</tr>
<tr>
<td></td>
<td>Prostate Gland * Legs</td>
<td>Menstrual Problems</td>
</tr>
<tr>
<td></td>
<td>Ankles * Feet * Toes</td>
<td>Lower Back Pain</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Pain or Numbness in Legs</td>
</tr>
</tbody>
</table>
Structure ~ skeletal
Musculo-skeletal alignment

Jaw structure

http://www.facefocused.com/proporpos.html
skeletal

**Functional skeletal nutrition**
- Calcium
- Magnesium
- Trace minerals
- Vitamin D 1,25-OH
- Vitamin A (RXR receptor)
- Vitamin K2
- Collagen: Silica, biotin, vit C
Structure ~ energetic matrix

- membranes
- barriers
- skeletal
- energetic matrix
- hormones
- proteins
Structure ~ energetic matrix

- membranes
- barriers
- skeletal
- energetic matrix
- hormones
- proteins

FASCIA
We hypothesize that the qi of the channels is the qi of the fascia. The fascia is unlike anything else in the human body. It extends throughout the body in a three-dimensional weblike form, surrounding all organs, tissues, and cells. It is connected to every aspect of human anatomy and physiology, from the cellular to the structural.
Sadness and shoulder protraction

The present study investigated the existence of a relationship between subjective sadness and body posture in 28 women, aged between 20 and 39 years, who had a normal body mass indices (or were underweight) and an absence of neurological, psychiatric or musculoskeletal disorders. The postural parameter photographed was protraction of the shoulder. The degree of sadness was rated by analog scales representing current and usual sadness. The results indicated that a relationship exists between protraction of the shoulder and usual sadness (p ≤ 0.05). However, there was no relationship between current sadness and the shoulder position. In conclusion, the usual sadness can lead to shoulder protraction.

Jose´ Luí’s Pimentel do Rosa´rio, PT, PhD*, et al. Can sadness alter posture? Journal of Bodywork & Movement Therapies (2013) 17, 328e331
Structure ~ fascia

Functional fascia nutrition

- Collagen
- Connective tissue: Vit C, biotin, zinc, silica, hyaluronic acid, minerals, water
- Active Leptospermum Honey
  www.dermasciences.com

MediHoney™
energetic matrix
Structure

- membranes
- barriers
- skeletal
- energetic matrix
- hormones
- proteins
RTKs like the Insulin receptor autophosphorylate residues in their intracellular domain as well as being able to phosphorylate additional substrate proteins.

A conformational change caused by the binding of insulin, allows one beta subunit of the Insulin receptor to phosphorylate the other subunit.

Insulin.
hormones / proteins

- Structure

- Functional insulin

http://www.cellsignal.com/reference/landscapes/adhesion.html#acEx_10
Function

- Nutritional biochemistry
- Water-base activity
- Lipid-base activity
- Energy transfer
- Microbiome
- Toxic interference
energy transfer

- **Electrolytes** (charged minerals) transferring electrons throughout fascia, tissues and fluids
LONG LATENCY NUTRIENT INSUFFICIENCY

Is there enough **iron** to satisfy healthy oxygen needs?

Is the body’s **microbiome** flourishing to support a strong immune function?

Is the **Vitamin D 25-OH** adequate to modulate a healthy immune function?

Do the **RBC fatty acids** provide cell membrane structural integrity?
Objectives

1) Distinguish between the structural and functional roles of nutrients in assessing nutrition status of an individual.

2) Examine two assessment tools used to identify basic structural and functional nutrient alterations of metabolism.

3) Observe a case study application of metabolic structure and function in nutrition assessment.
Two Assessment Tools

- Fats & Oils Survey
- S&F Nutrition Status
### Fats and Oils

Please indicate how many times PER WEEK you eat the following fats/oils:

<table>
<thead>
<tr>
<th>OMEGA 9 (stabilizer)</th>
<th>Name</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Almond Oil</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Almonds/Cashews</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Almond butter</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Avocados</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Peanuts</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Peanut butter (natural/salt)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>OMEGA 6 (controllers)</th>
<th>Essential Fatty Acid Family</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>LA → GLA → DGLA → AA</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Eggs (whole), organic (AA)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Meats (commercial) (AA)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Meats (grass-fed. organ. (AA)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Brazil nuts (raw)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Pecan (raw)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Hazelnuts/Filberts (raw)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Hemp Seeds</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>OMEGA 3 (fluidity/communicators)</th>
<th>Essential Fatty Acid Family</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>ALA → EPA → DHA</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Fish Oil capsule: ↑DHA</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Fish Oil capsule: ↑EPA</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Fish (salmon/salmon fish)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Fish (shelling)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Flax seeds/meal</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>BENEFICIAL SATURATED (structure)</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>~10% of daily fat calories</td>
</tr>
<tr>
<td></td>
<td>Coconut Oil</td>
</tr>
<tr>
<td></td>
<td>Butter, organic</td>
</tr>
<tr>
<td></td>
<td>Ghee (clarified butter)</td>
</tr>
<tr>
<td></td>
<td>Dairy, raw &amp; organic</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>DAMAGED FATS/OILS (promoting stress to cells &amp; tissues)</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Should be &lt;5% (try to avoid)</td>
<td></td>
</tr>
<tr>
<td>Trans Fats</td>
<td></td>
</tr>
<tr>
<td>Acrylamides</td>
<td></td>
</tr>
<tr>
<td>Odd-Chain Fatty Acids</td>
<td></td>
</tr>
<tr>
<td>VLCFA/damaged</td>
<td></td>
</tr>
<tr>
<td>Margarine</td>
<td></td>
</tr>
<tr>
<td>Reg. vegetable oils (corn, sunflower, canola)</td>
<td></td>
</tr>
<tr>
<td>Mayonnaise (commercial)</td>
<td></td>
</tr>
<tr>
<td>Hydrogenated Oil (as an ingredient)</td>
<td></td>
</tr>
<tr>
<td>“Imitation” cheeses</td>
<td></td>
</tr>
<tr>
<td>Tempura</td>
<td></td>
</tr>
<tr>
<td>Doughnuts (fried)</td>
<td></td>
</tr>
<tr>
<td>Deep-fried foods</td>
<td></td>
</tr>
<tr>
<td>Chips fried in oil</td>
<td></td>
</tr>
<tr>
<td>Reg. Salad dressing</td>
<td></td>
</tr>
<tr>
<td>Peanut Butter (JIF, etc)</td>
<td></td>
</tr>
<tr>
<td>Roasted nuts/seeds</td>
<td></td>
</tr>
<tr>
<td>Non-dairy products</td>
<td></td>
</tr>
</tbody>
</table>

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## Integrative & Functional Nutrition Assessment of Structure and Function Worksheet

<table>
<thead>
<tr>
<th>Anthropometrics</th>
<th>Measurement</th>
<th>Goal Reference</th>
<th>Structure</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>Height</td>
<td>inch</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Weight</td>
<td>Lb.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Waist Circumference</td>
<td>inch</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Waist/Height Ratio</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Cell-Metabolic Scan</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BIA: Phase Angle</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BIA: Capacitance</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BIA: Intracellular H2O%</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Body Water %</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BMR</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BMI</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Nutrition Physical Exam</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Skin / Scalp</td>
<td>Clear/good color</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Face</td>
<td>Good affect/color</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Eyes</td>
<td>Clear/bright</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nails</td>
<td>Smooth, pink, hard</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hair</td>
<td>Shiney, thick, strength</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Eyebrows</td>
<td>Full eyebrow cover</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Earlobe</td>
<td>smooth</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Muscle tone</td>
<td>Firm, toned</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Body Shape</td>
<td>Lean, balanced</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Diet History</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Food Intake</td>
<td>Balanced, lo antigen</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Contaminants</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Junk Food</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
## Integrative & Functional Nutrition Assessment of Structure and Function Worksheet

<table>
<thead>
<tr>
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<td></td>
<td></td>
<td></td>
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<tr>
<td>Waist Circumference</td>
<td>inch</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Waist/Height Ratio</td>
<td>inch</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Cell-Metabolic Scan

<table>
<thead>
<tr>
<th><strong>BIA: Phase Angle</strong></th>
<th><strong>BIA: Capacitance</strong></th>
<th><strong>BIA: Intracellular H2O%</strong></th>
<th><strong>Total Body Water %</strong></th>
<th><strong>BMR</strong></th>
<th><strong>BMI</strong></th>
</tr>
</thead>
</table>

### Nutrition Physical Exam

<table>
<thead>
<tr>
<th><strong>Skin / Scalp</strong></th>
<th><strong>Clear/good color</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Face</strong></td>
<td>Good affect/color</td>
</tr>
<tr>
<td><strong>Eyes</strong></td>
<td>Clear/bright</td>
</tr>
<tr>
<td><strong>Nails</strong></td>
<td>Smooth, pink, hard</td>
</tr>
<tr>
<td><strong>Hair</strong></td>
<td>Shiney, thick, strength</td>
</tr>
</tbody>
</table>

### Diet History

<table>
<thead>
<tr>
<th><strong>Food Intake</strong></th>
<th><strong>Balanced, low antigen</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Junk Food</strong></td>
<td>0</td>
</tr>
</tbody>
</table>

### Digestion & Absorption

<table>
<thead>
<tr>
<th><strong>Post eating sense</strong></th>
<th><strong>Well-being</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>BM – how often?</strong></td>
<td>1-3 daily</td>
</tr>
</tbody>
</table>

### Cellular utilization

<table>
<thead>
<tr>
<th><strong>Minerals: Mg, Ca, Cl, K, Na</strong></th>
<th><strong>Lab reference</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Antioxidants: C, phytonutrit</strong></td>
<td>Healthy, healthy skin</td>
</tr>
<tr>
<td><strong>Protein</strong></td>
<td><strong>Total Protein (b)</strong></td>
</tr>
<tr>
<td><strong>Fats: EFA, w9, w6, BenSats</strong></td>
<td><strong>RBC Fatty Acid (b)</strong></td>
</tr>
<tr>
<td><strong>Fat Vit D, E, K1, K2, A</strong></td>
<td><strong>Blood tests reference (b)</strong></td>
</tr>
<tr>
<td><strong>Methylation nutrition</strong></td>
<td><strong>CBC, single tests</strong></td>
</tr>
<tr>
<td><strong>Minerals: I, Se, Mo, Mn</strong></td>
<td><strong>Single tests</strong></td>
</tr>
<tr>
<td><strong>Toxic Metals</strong></td>
<td><strong>Urine/Blood tests ref</strong></td>
</tr>
<tr>
<td><strong>Petrochemicals</strong></td>
<td><strong>Urine or blood</strong></td>
</tr>
<tr>
<td><strong>Endocrine disrupting</strong></td>
<td></td>
</tr>
</tbody>
</table>
Objectives

1) Distinguish between the **structural** and **functional roles** of nutrients in assessing nutrition status of an individual.

(2) Examine **two assessment tools** used to identify basic structural and functional nutrient alterations of metabolism

(3) Observe a **case study application** of metabolic structure and function in nutrition assessment
Case Study 8 year old girl

- Poor student
- Told will be held back
- Parents harsh divorce
- Grandmother caretaker
- Initial presentation neck pain and head not held straight
Case Study 8 year old girl

- **#1 Priority** – Cranial Sacral chiropractic
- **#2 Relaxing minerals**
  Magnesium 300 mg QD
- **#3 Anti-inflammatory**: GLA
  Evening Primrose 260 mg QD (ate fish 3x weekly)
- **#4 Basic nutrients**
  MVI – child dose
Case Study 8 year old girl

- Summer School
- Lead in school play
- Reading books and loving them!
- Smiling with a straight neck

[Image of a girl with the text: Victoria Hooten]
Case Study 43 year old woman
Severe Migraines / Neck Pain

- **Ballerina since 10 yo**
- Long term steroids, Imitrex for migraines
- **Multiple falls on head history through 20’s**
- Migraines early 20’s through current
- **Celiac – diagnosed 1 year ago**
Case Study 43 year old woman
Severe Migraines / neck pain

Functional Nutrition Plan

- **1st:** NUCCA C1-C2 evaluation
- **Anti-inflammatory GLA**
  - *(hx of hi Omega 3 EPA)*
- Quercitin + Magnesium
- **MVI - hypoallergenic**
- Gluten-free & Casein free diet with fermented foods
- **Rec: Cross-reactivity testing**
Case Study 43 year old woman
Severe Migraines / neck pain

Functional Nutrition Plan

1st: NUCCA C1-C2 evaluation

C-1 – C-2 severe misalignment

4 visits NUCCA – neck pain gone!
Case Study 8 year old boy
Asthma since 2 yo

- Cesarean birth – low microflora exposure
- IV antibiotics at birth x 4 days
- Long term steroids, inhaler Rx
- Severe cow milk IgE allergy testing – still eating milk
- Seven medications
- ER visits 2x monthly
- Unable to play PE at school
Case Study 8 year old boy
Asthma since 2 yo

- Correct dietary oil intake
- **Casein-free diet**
- Probiotics 450 billion QD 30 days in Coconut plain yogurt
- **MVI – child dose liquid**
- 5-MTHF 800 mcg QD
- **GLA 390 mg QD to inc PG1**

Stop the fire in the lung barrier!
change the structure for function!!
Key Message 1

“Nutrient influences on both Structure and Function play important roles in nutrition assessment”
Key Message 2

“structure produces function”

“poor structure produces dysfunction”
Questions

DIFM_Listserv@yahoogroups.com

[Instructions to join is on DIFM website; under member services tab]
References

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