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Today's mission

Help you think about what you put in your body, when and why

What you eat

- Half your grains whole?
- 5-a-day fruits and vegetables?
- 3-4 servings of milk?
- Added sugars?
- Added fats?

What do your plates look like?

1/2 (or more) vegetables, fruits, whole grains, and beans

1/4 (or less) animal protein

Hydration

dehydrated urine rehydrated urine

AM I HYDRATED?	
Urea Color Chart	
1	Light yellow
2	Yellow
3	Orange
4	Dark orange
5	Red
6	Dark red
7	Brown
8	Black

Figure 6-2
Creatinine concentration (mg/dL) vs. Time after rehydration (hour)

Training and diet

- Different seasons for different reasons
- Eating to achieve your goals
- What are your goals?

Before Activity

- Timing to event
- Carbohydrate to top off your muscle's fuel stores
- Fluids
- Caffeine or other stimulants?
- Small protein?
- Examples: Gatorade and pretzels, orange and banana with water, bagel with jelly and milk or water, cereal bar and tea.

During Activity

- Depends on how long you are working and what you did before the session
- Intense activity longer than 60-90 minutes, a little Gatorade-like product will help sustain intensity
- Sodium loss and hydration
- How much: 30-60 g per hour

After Activity

- Muscle recovery may well be the most important "anabolic" timing you can do to see muscle growth
- Carbohydrate and fluid are primary
- Protein is secondary
- Timing of this snack
- Examples: 2 cups lowfat chocolate milk and pretzels, small ham sandwich and water, Gatorade with grapes and 2 ounces of string cheese

Usual diet

- Fairly high in carbohydrate
- Right amount of protein
- Nice balance of fats
- Fruits and vegetables
- Lowfat dairy products, right amount meat
- Constantly thinking hydration

Factors we know affect lean mass

- Genetics
- Working out
- Sleep
- What you eat
 - Before
 - During
 - After
 - All day

How much protein should I get?

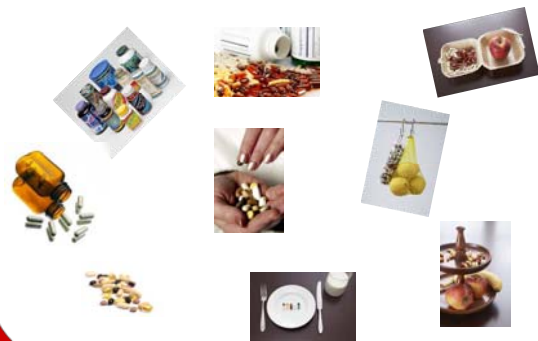
- Body cannot use more than 1.8 g/kg if an adult
- Top number for adolescents is 2.2 g/kg
- $\text{Body weight} \div 2.2 = \text{your kg}$
- Then times 1.8...top amount of protein

Habits of champions

- Eat breakfast
- Plan what your day looks like.... Bring your food!
 - Before
 - During
 - After
- Eat every 3 hours or so, how much matches your goals!
- Hydration, hydration, hydration



How is your health by the way?



Shifting gears

- DSHEA of 1994
 - Dietary Supplement Health and Education Act
- A dietary supplement is a product (other than tobacco) that
 - is intended to supplement the diet;
 - contains one or more dietary ingredients (including vitamins; minerals; herbs or other botanicals; amino acids; and other substances) or their constituents;
 - is intended to be taken by mouth as a pill, capsule, tablet, or liquid; and
 - is labeled on the front panel as being a dietary supplement.

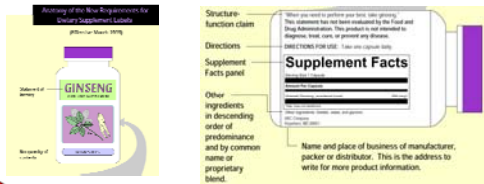
SNWL supplements

- Grew last year by \$2B in new sales to \$22.7B industry
 - Energy drinks and shots \$12 B
 - Evidence of ingredient issues
 - January 2011, O.J. Mayo of the Memphis Grizzlies
 - Pediatrics journal article

May 1, 2011, Marketresearch.com

Identifying a "Supplement"

- "This statement has not been evaluated by the FDA. This product is not intended to diagnose, treat, cure, or prevent any disease."
- Must be labeled by federal guidelines



The Issues...by law

Under-regulated by the FDA

No evidence required for safety or efficacy as long as no new ingredients

"Not allowed" to market unsafe or ineffective supplements

Once marketed, FDA has to show product is not safe to remove it from the market

Before you buy it, wouldn't you like to know...

- **Integrity** – truthful and works
- **Purity** – has what it says in it
- **Dissolution** – will dissolve in your body
- **Safe manufacturing** - clean equipment and process

Safety

Quality



Efficacy

Safety Resources

- MedWatch: <http://www.fda.gov/Safety/MedWatch/default.htm>
- Quackwatch: <http://quackwatch.org/>
- Dietary warnings and safety information from the U.S. Food and Drug Administration: <http://www.fda.gov/Food/DietarySupplements/Alerts/default.htm>
- Recall of products: <http://www.fda.gov/Safety/Recalls/default.htm>
- USADA safety <http://www.supplementsafetynow.com/>

Quality: USP

- United States Pharmacopeia
- Designates strength, quality, purity, packaging, labeling, speed of dissolution and acceptable length of storage of ingredients for drugs
- Can learn more about this program at: <http://www.usp.org/USPVerified/>
- <http://www.usp.org/USPVerified/dietarySupplements/supplements.html>



USP stamp means:

1. What's on the label is in fact in the bottle—all the listed ingredients in the declared amount.
2. The supplement does not contain harmful levels of contaminants.
3. The supplement will break down and release ingredients in the body
4. The supplement has been made under good manufacturing practices.

Consumer Labs



- Small cost to subscribe but well worth it
- Excellent review of product ingredients
 - Strength of active ingredients
- Often release recalls or studies of contamination

Other Quality Testing (Legal?)

- Verify the identity and quantity of dietary ingredients declared on product label.
- Ensure the product does not contain undeclared ingredients or unacceptable levels of contaminants.
- Demonstrate conformance to currently recommended industry GMPs for dietary supplements.
- Comparison against various banned substances lists to avoid positive drug tests

Regulatory

- WADA
- USASA Drug Reference Online
– GlobalDRO.com
- NCAA
– Illegal vs non-permissible
- Particular sport organizations

3rd party verifications



<http://www.nsf.org/Certified/BannedSub/Lists.asp>



<http://www.bscg.org/Certified-Products.php>



<http://www.informed-choice.org/tested-products>

What are the chances?

- Adulteration means the supplement has substances other than what is in the label.
- Cologne Study
 - IOC accredited doping lab in Germany
 - 634 supps from 13 countries and 215 suppliers
 - Non-hormonal supplements
 - Tested for 11 specific anabolic agents
 - 94 tested as a positive supplement (14.8%)
 - US supplements were 18.8%
 - **This is a 1 in 5 risk**

Drug testing



- Most sports have rules and testing
 - NCAA
 - Ohio High School
 - Pro sports
 - IOC

Efficacy Resources

- Fact sheets on dietary supplements from the National Institutes of Health: <http://ods.od.nih.gov/factsheets/list-all/>
- National Institutes of Health, Office of Dietary Supplements
http://ods.od.nih.gov/Research/PubMed_Dietary_Supplement_Subset.aspx
- Natural Medicines database:
<http://naturaldatabase.therapeuticresearch.com/home.aspx?cs=osu&s=ND>
- Australian Institute of Sport: <http://www.ausport.gov.au/ais/nutrition>

Tips on spotting fraud

- Answer to many issues or health problems
- Testimonials
- Quick fix
- “Natural”
- Newly identified product
- Satisfaction guaranteed
- Slams science

Bottom Line



If it sounds too good to be true...

...it likely is too good to be true.

The secret to good health and performance



Thank you!



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Labs in Life @ COSI



Surprising TV clips

- <http://www.fox19.com/story/15933318/community-surprised-by-steroid-abuse>
- <http://search.espn.go.com/energy-drinks/videos/6>