Consultants To:

- ERFU – since 2002
- THFC, MCFC
- UKA – Loughborough site 2012 Olympics
- Tigers, Wasps, Saracens, Irish
- Olympic finalists and medallists
- Boxing, British light weight champion
- Your grandma
- 1000’s of ill and over weight clients......
Information Resources

- www.sportsnutritionvlog.com
- www.fourweekfatloss.com
- www.adrenaltest.co.uk
Perform and Function Mission

Improved health of the nation through dispelling dietary myths and improving food and exercise awareness through the education of our clients.

Maximum health, wellness and performance to those following the programmes we design – whilst keeping happy!

FOOD AS CLOSE AS NATURE INTENDED IT TO BE WITH MODERN BIOCHEMISTRY TOPPING

- Medieval symbol;
- Free, to choose
- Cheerful, happy
- Hardy, strong work ethic
- Respectful of nature, spirit and soul
<table>
<thead>
<tr>
<th>Hormonal Enhancers</th>
<th>Lactate Enhancers</th>
<th>Blood Flow Enhancers</th>
<th>Oxygen Delivery Enhancers</th>
<th>CNS DRIVE Enhancers</th>
<th>Energy Substrate</th>
</tr>
</thead>
<tbody>
<tr>
<td>LH enhancers</td>
<td>Bicarbonate / sodium citrate</td>
<td>Citrulline / Malate</td>
<td>Chlorophyll</td>
<td>Nueron</td>
<td>Co Q 10</td>
</tr>
<tr>
<td>DHEA enhancers - herbal</td>
<td>Beta alanine</td>
<td>AAKG / Arginine</td>
<td>Beetroot Juice</td>
<td>Actetyl choline DMAE</td>
<td>NADH</td>
</tr>
<tr>
<td>Adaptogens</td>
<td>Phosphates (creatine)</td>
<td>Gingko Biloba</td>
<td>Heam Iron (liver)</td>
<td>Brain Vibrance Gels</td>
<td>Mitochondria enhancement</td>
</tr>
<tr>
<td>Direct T booster</td>
<td>Pine Bark Extract</td>
<td>Niacin</td>
<td>Ashwagandaa</td>
<td>Caffeine</td>
<td>D-ribose</td>
</tr>
<tr>
<td>Anti - E</td>
<td>NAC</td>
<td>Rhodiola</td>
<td>Alpha GPC</td>
<td>Creatine / analogues</td>
<td></td>
</tr>
</tbody>
</table>
CONCLUSIONS:
Even short-term (17d) consumption of a paleolithic type diet improves BP and glucose tolerance, decreases insulin secretion, increases insulin sensitivity and improves lipid profiles without weight loss in healthy sedentary humans.
The environmental obesogen bisphenol A promotes adipogenesis by increasing the amount of 11β-hydroxysteroid dehydrogenase type 1 in the adipose tissue of children. Wang J, Sun B, Hou M, Pan X, Li X.

Source
Department of Children's Health Care, Nanjing Children's Hospital Nanjing Medical University, Nanjing, China.
Figure 1: Trends in adult prevalence of obesity (BMI ≥30kg/m2) – percentage of the adult population assessed as obese in a selection of countries

Don’t Eat like this if you want to succeed in power based sports
ChooseMyPlate.gov
GO BACK. WE FUCKED UP EVERYTHING.
Weapons of Mass Destruction
Healthy Vending Machines?

Modern Choices

- If it ain’t natural don’t eat it
- Modern food production and selection is a minefield
- If its not how nature intended it to be then it may be an idea to avoid it
What the right nutrition can do

- Protect against disease and improve health and performance through;
- Hydration for energy & performance
- Balance blood sugar for mental/physical performance
- Support fat loss and/or muscle gain
- Improve cellular function
- Provide the right fuel for maximum performance
- Support a healthy immune system

- Influence the way you feel, think and behave
Consequences of Poor Nutrition

- **LACK OF ENERGY!**
- Lower mental acuity
- Poor aerobic capacity worsened by;
- Failure to gain lean muscle mass
- Increased fat mass
- Lethargy - ‘Heavy legs’
- Slow recovery from sporting events
- Infection and injury
- Shorter life span
- Sarcopenia
Get the Basics Right......

• BASICS ESTABLISH A BASE

• 9 out of 10 of these things you probably already know

• Hopefully the 10th thing will add a little bit to your own knowledge and ability to apply that knowledge....

• You will get all slides for your reference and information pack email me.....

matt@performandfunction.co.uk
Want Change? Elicit Change (Prochaska & Diclemente, 1982)

- **Pre-contemplation** - What’s the problem?
- **Contemplation** - To change or not to change?
- **Preparation** – Get ready...
- **Action** – Make that change!
- **Maintenance** - Integration into life
- **Relapse** - A full return to the old behaviour.
  - This is likely - and should not be seen as failure.
  - Often people will Relapse several times before they finally succeed
Goal Setting: SMART

- Specific
- Measured
- Time-bound
- Relevant
- Achievable
Goal Setting...

Bare in Mind:

- **Specific and MEASUREABLE**
  - Defined, **Achievable** end points
    - Weight
    - Strength
    - % Body-fat

- **Relevance - Why?**
  - Health statistics
  - Performance

- **Time Bound**
  - Rate – Plan milestones

جوالهاله: WRITE IT DOWN
Principle 1; Preparation Principle – food 1st

• Trying to build a healthy, optimally functioning body out of poor ingredients is like trying to put icing on an unmade cake

• Adding performance nutrients to an unmade cake is worthless

• Take time to choose, prepare and cook your food – you are what you eat……..

Proper preparation prevents piss poor performance……….
Meal Construction

- [www.yoursportsnutrition.com/recipes](http://www.yoursportsnutrition.com/recipes)
- Quality functional proteins
- Energy ingredient with protective value
- E.g. carb source with protective benefit
- Source of essential fats
- Source of saturates +/- depending on energy requirements
- Additional protective and functional ingredients, spices, herbs, etc
Protein

• “Of great importance”

• Roles; building blocks

• Nitrogen retention; protein synthesis

• Protein synthesis (PS) Protein degradation (PD) PS > PD to increase muscle
Not just about muscles;

• Slows down carbohydrate absorption
• Builds neurotransmitters
• Stimulates sympathetic ANS
• Builds hormones
• Sustains immune function
• Builds energy
Increase oily fish, omega eggs, olive oil and walnuts over other sources of nuts.

Benefits of improving your ratio include:
- Less inflammation
- Lower fat storage
- Better insulin sensitivity – better blood sugar control
- Increased muscle mass through increased protein synthesis
- Health benefits in older age
- Improved brain health
- Improved skin condition
- Better performance

Avoid sunflower oil, crisps, chips, donuts and anything cooked in vegetable oils.

**Wild food is always better**

In terms of higher omega 3 and lower omega 6 levels.

Most nuts are high in Omega 6 and low in Omega 3. Aiming for more walnuts and pecans can help rebalance your omega ratio.

<table>
<thead>
<tr>
<th>Nut</th>
<th>Omega 3 : Omega 6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pistachio Nuts</td>
<td>51.9 : 1</td>
</tr>
<tr>
<td>Hazelnuts</td>
<td>90.0 : 1</td>
</tr>
<tr>
<td>Pumpkin Seeds</td>
<td>114.4 : 1</td>
</tr>
<tr>
<td>Brazil Nuts</td>
<td>377.9 : 1</td>
</tr>
<tr>
<td>Sunflower Seeds</td>
<td>472.9 : 1</td>
</tr>
<tr>
<td>Almonds</td>
<td>Extremely High</td>
</tr>
<tr>
<td><strong>Peanuts</strong></td>
<td>Extremely High</td>
</tr>
</tbody>
</table>

No detectable omega 3 fats

**IMPROVING OMEGA 3/6 RATIO**
• Wild fish 20% higher protein content
• 20% lower fat content
• Higher omega 3 content
• Lower omega 6 content
• Zero antibiotic and pesticides
• No artificial colouring (canthaxanthin a synthetic pigment)
Super Sardines

One can = 30% Daily Calcium, 150 % B12, 65 % Selenium
Salad Dressings/Meat Marinades

- 2 Minute Satay Sauce
- 30g Peanut Butter
- 5 g Curry Paste
- warm water

This is so easy it’s untrue. The only thing you have to do is to make sure you get the right type of curry paste. I like to keep my Satay Sauce close to its South East Asian roots and choose a Thai style curry paste but even a madras curry paste will work. Choose a paste that is just ground up spices with a bit of oil not a ‘cook in sauce’ type of paste.

Put the peanut butter into a small bowl add warm water and stir until it starts to get runny and then add in the curry paste. You can add more peanut butter to thicken or more paste to increase the spiciness of the curry sauce.
George Forman Grill
George Forman Grill Recipes

Beef Fillet

Burgers and Broccoli
Slow Cooker
Slow Cooker Recipes

Beef Stew

Moroccan Lamb Stew
Steamer Recipes

Mullet, Steamed Kale and Bechamel Sauce

Steamed Salmon and Vegetables
WOK and FRYING-PAN

Chorizo, chicken and chickpeas in a pan

Rabbit with thyme and courgettes
Hand-held Blender
Hand-held Blender Recipes

- Borscht Soup
- Smoothies
- Mackerel Paté
Garlic Crusher
Lunch....Super Salad
Salad Dressing

- 2 tbsp Cider Vinegar
- 1 tbsp Olive Oil
- A good few dashes of Tamari/Soya Sauce
- 1 teaspoon Honey
- 2 cloves Garlic
- 1 pinch of salt
- 1 pinch of pepper

Add all ingredients together and blend into a sauce.
<table>
<thead>
<tr>
<th>Food</th>
<th>PROTEIN</th>
<th>CARBOHYDRATE/VEG</th>
<th>VEGETABLES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Breakfast</td>
<td><img src="image1.jpg" alt="Breakfast protein" /></td>
<td><img src="image2.jpg" alt="Breakfast carbohydrate/vegetable" /></td>
<td><img src="image3.jpg" alt="Breakfast vegetables" /></td>
</tr>
<tr>
<td>Lunch</td>
<td><img src="image4.jpg" alt="Lunch protein" /></td>
<td><img src="image5.jpg" alt="Lunch carbohydrate/vegetable" /></td>
<td><img src="image6.jpg" alt="Lunch vegetables" /></td>
</tr>
<tr>
<td>Snack</td>
<td><img src="image7.jpg" alt="Snack protein" /></td>
<td><img src="image8.jpg" alt="Snack carbohydrate/vegetable" /></td>
<td><img src="image9.jpg" alt="Snack vegetables" /></td>
</tr>
<tr>
<td>Dinner</td>
<td><img src="image10.jpg" alt="Dinner protein" /></td>
<td><img src="image11.jpg" alt="Dinner carbohydrate/vegetable" /></td>
<td><img src="image12.jpg" alt="Dinner vegetables" /></td>
</tr>
<tr>
<td>MEALS</td>
<td>MONDAY – Light training</td>
<td></td>
<td></td>
</tr>
<tr>
<td>------------</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Food</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Breakfast</strong></td>
<td>![Breakfast Image]</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Lunch</strong></td>
<td>![Lunch Image]</td>
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</tr>
<tr>
<td><strong>Snack</strong></td>
<td>![Snack Image]</td>
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<tr>
<td><strong>Dinner</strong></td>
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<tr>
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<td>![PROTEIN Image]</td>
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<tr>
<td><strong>CARBOHYDRATE/VEG</strong></td>
<td>![Carbohydrate/Veg Image]</td>
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</tr>
<tr>
<td><strong>VEGETABLES</strong></td>
<td>![Vegetables Image]</td>
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</tr>
<tr>
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</tr>
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<td><strong>Food</strong></td>
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<td><strong>CARBOHYDRATE/VEG</strong></td>
<td><strong>VEGETABLES</strong></td>
</tr>
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<td>Breakfast</td>
<td><img src="image1" alt="Breakfast Protein" /></td>
<td><img src="image2" alt="Breakfast Carbohydrate/VEG" /></td>
<td><img src="image3" alt="Breakfast Vegetables" /></td>
</tr>
<tr>
<td>Lunch</td>
<td><img src="image4" alt="Lunch Protein" /></td>
<td><img src="image5" alt="Lunch Carbohydrate/VEG" /></td>
<td><img src="image6" alt="Lunch Vegetables" /></td>
</tr>
<tr>
<td>Snack</td>
<td><img src="image7" alt="Snack Protein" /></td>
<td><img src="image8" alt="Snack Carbohydrate/VEG" /></td>
<td><img src="image9" alt="Snack Vegetables" /></td>
</tr>
<tr>
<td>Dinner</td>
<td><img src="image10" alt="Dinner Protein" /></td>
<td><img src="image11" alt="Dinner Carbohydrate/VEG" /></td>
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<td>MEALS</td>
<td>MONDAY – Light training</td>
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</tr>
<tr>
<td>Breakfast</td>
<td>PROTEIN</td>
<td>CARBOHYDRATE/VEG</td>
<td>VEGETABLES</td>
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<tr>
<td></td>
<td>![image]</td>
<td>![image]</td>
<td>![image]</td>
</tr>
<tr>
<td>Lunch</td>
<td>![image]</td>
<td>![image]</td>
<td>![image]</td>
</tr>
<tr>
<td>Snack</td>
<td>![image]</td>
<td>![image]</td>
<td>![image]</td>
</tr>
<tr>
<td>Dinner</td>
<td>![image]</td>
<td>![image]</td>
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<td>Food</td>
<td>PROTEIN</td>
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<td>VEGETABLES</td>
</tr>
<tr>
<td>------------</td>
<td>--------------------------</td>
<td>---------------------------</td>
<td>---------------------</td>
</tr>
<tr>
<td>Breakfast</td>
<td>Avocado, egg</td>
<td>Blackberries, yogurt</td>
<td>Spinach</td>
</tr>
<tr>
<td>Lunch</td>
<td>Salmon, pasta</td>
<td>Orzo, vegetables</td>
<td>Smoothies</td>
</tr>
<tr>
<td>Snack</td>
<td>Chili, soup</td>
<td>Soup, vegetables</td>
<td>Fruit platter</td>
</tr>
<tr>
<td>Dinner</td>
<td>Grilled seafood, salad</td>
<td>Mixed salad, tea</td>
<td></td>
</tr>
<tr>
<td>MEALS</td>
<td>MONDAY – Light training</td>
<td></td>
<td></td>
</tr>
<tr>
<td>-------</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Food</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SNACKS</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SPICES/HERBS</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>OTHER ITEMS</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- Walnuts
- Pecans
- Chocolates
- Artichokes
- Strawberries
- Berries
- Coffee
- Matcha
- Teas
<table>
<thead>
<tr>
<th>ORAC Database</th>
<th>ORAC Database</th>
</tr>
</thead>
<tbody>
<tr>
<td>Foods ranked per 100g basis</td>
<td>Foods ranked per typical serving</td>
</tr>
<tr>
<td><strong>µmol TE/100g</strong></td>
<td><strong>µmol TE/100g</strong></td>
</tr>
<tr>
<td>Spices, cloves, ground</td>
<td>314446</td>
</tr>
<tr>
<td>Spices, cinnamon, ground</td>
<td>267536</td>
</tr>
<tr>
<td>Spices, oregano, dried</td>
<td>200129</td>
</tr>
<tr>
<td>Spices, turmeric, ground</td>
<td>159277</td>
</tr>
<tr>
<td>Cocoa, dry powder, unsweetened</td>
<td>80933</td>
</tr>
<tr>
<td>Spices, cumin seed</td>
<td>78800</td>
</tr>
<tr>
<td>Spices, parsley, dried</td>
<td>74349</td>
</tr>
<tr>
<td>Spices, basil, dried</td>
<td>67553</td>
</tr>
<tr>
<td>Baking chocolate, unsweetened</td>
<td>49926</td>
</tr>
<tr>
<td>Spices, curry powder</td>
<td>48504</td>
</tr>
<tr>
<td>Chocolate, dutched powder</td>
<td>40200</td>
</tr>
<tr>
<td>Sage, fresh</td>
<td>32004</td>
</tr>
<tr>
<td>Spices, mustard seed, yellow</td>
<td>29257</td>
</tr>
<tr>
<td>Spices, ginger, ground</td>
<td>28811</td>
</tr>
<tr>
<td>Spices, pepper, black</td>
<td>27818</td>
</tr>
<tr>
<td>Thyme, fresh</td>
<td>27426</td>
</tr>
<tr>
<td>Marjoram, fresh</td>
<td>27297</td>
</tr>
<tr>
<td>Spices, chili powder</td>
<td>23838</td>
</tr>
<tr>
<td>Candies, chocolate, dark</td>
<td>20823</td>
</tr>
<tr>
<td>Candies, semisweet chocolate</td>
<td>18053</td>
</tr>
</tbody>
</table>

**TOP ANTIOXIDANT FOODS**

<table>
<thead>
<tr>
<th>Food</th>
<th>ORAC* Units per 100g</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dark Chocolate</td>
<td>13,120</td>
</tr>
<tr>
<td>Prunes</td>
<td>5,770</td>
</tr>
<tr>
<td>Raisins</td>
<td>2,830</td>
</tr>
<tr>
<td>Blueberries</td>
<td>2,400</td>
</tr>
<tr>
<td>Blackberries</td>
<td>2,036</td>
</tr>
<tr>
<td>Kale</td>
<td>1,770</td>
</tr>
<tr>
<td>Strawberries</td>
<td>1,540</td>
</tr>
<tr>
<td>Spinach</td>
<td>1,260</td>
</tr>
<tr>
<td>Raspberries</td>
<td>1,220</td>
</tr>
<tr>
<td>Brussels Sprouts</td>
<td>980</td>
</tr>
<tr>
<td>Plums</td>
<td>949</td>
</tr>
<tr>
<td>Alfalfa Sprouts</td>
<td>930</td>
</tr>
<tr>
<td>Broccoli Florets</td>
<td>890</td>
</tr>
<tr>
<td>Oranges</td>
<td>750</td>
</tr>
<tr>
<td>Grapes, red</td>
<td>739</td>
</tr>
<tr>
<td>Red Bell Pepper</td>
<td>710</td>
</tr>
<tr>
<td>Cherries</td>
<td>670</td>
</tr>
<tr>
<td>Onion</td>
<td>450</td>
</tr>
<tr>
<td>Corn</td>
<td>400</td>
</tr>
<tr>
<td>Eggplant</td>
<td>390</td>
</tr>
</tbody>
</table>

Data from U.S. Department of Agriculture and the Journal of the American Chemical Society
All habits form by the same 3–step process. (Graphic based on Charles Duhigg’s “Habit Loop” in The Power of Habit. Created by James Clear.)
High Intensity Training May Offer an Efficient Solution...

- Training time commitment over 2 weeks was approximately 2.5 h for SIT and approximately 10.5 h for ET (Gibala, M. J., J. P. Little, et al. (2006))
- Family; 1h 15mins down to 6 minute workouts!
No Time for Exercise?

No Time for Excuses...

- Gym near work?
- Convict Conditioning! Insanity fitness!
- Incorporate into lifestyle
  - If gyms aren’t for you, join a sports/social club that involves activity
    - Walking/rambling
    - Dancing
    - Yoga
- Incorporate into daily schedule
  - 20 minutes intense exercise will do - INTENSE
  - On the way to/from work
  - Incidental exercise – walk, cycle, jog
    - STAIRS RATHER THAN LIFTS
Prepare: The Power Hour

The clock is ticking....

- On a Sunday (or in down-time) set aside 1 hour
- Cook a dish for recovery from intense exercise, as well as a more functional, low carb recipe.
  - Make enough for a week’s worth of lunches/dinners – those meals when you need to have some portable food with you...
- Portion them up and freeze them (in portable containers), to avoid the temptation of overindulging!
- Schedule your meals for the week in advance – know when you need to be able to eat on the move
SLEEP

• Answer the following questions yes if it applies to you more than once each week

• Do you have trouble falling asleep?

• Do you find it difficult to wake up?

• Do you sleep less the 8-9 hours?

• Do you wake once or more?

• Do you sleep in a room with light or noise?
<table>
<thead>
<tr>
<th>Question</th>
<th>Answer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Do you wake up feeling tired?</td>
<td></td>
</tr>
<tr>
<td>Do you wake up with an alarm?</td>
<td></td>
</tr>
<tr>
<td>Do you go to bed later than 11pm?</td>
<td></td>
</tr>
<tr>
<td>Do you get up earlier than 6am?</td>
<td></td>
</tr>
<tr>
<td>Do you use medication to get to sleep?</td>
<td></td>
</tr>
</tbody>
</table>

If you answered yes to 2 or more of these questions, you need to look at working on your sleeping patterns.
Physiological and Metabolic Changes During Intense Exercise

<table>
<thead>
<tr>
<th>Description</th>
<th>Change</th>
<th>Description</th>
<th>Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>ATP levels</td>
<td>Depleted</td>
<td>Muscle damage</td>
<td>Increased</td>
</tr>
<tr>
<td>Muscle glycogen</td>
<td>Partially depleted</td>
<td>Immune system</td>
<td>Suppressed</td>
</tr>
<tr>
<td>Cortisol levels</td>
<td>Increased</td>
<td>Inflammation</td>
<td>Increased</td>
</tr>
<tr>
<td>Protein degradation</td>
<td>Increased</td>
<td>Fluid loss</td>
<td>Increased</td>
</tr>
</tbody>
</table>

You are what you eat, and what you ate, just ate…….
Energy Systems

- **ATP Store**
- **ATP-PC System**
- **Lactic Acid System**
- **Overall Performance**
- **Aerobic System**

T = Threshold Point

% of maximum rate of energy production

Time scales: 2 sec, 10 sec, 1 min, 2 hrs
Principle 2; Biochemical Individuality

• Each person has a different set of variables which make up their biochemical individuality, knowing what these are is critical to success, gene testing, intolerance testing, micro-nutrient deficiency testing….

• There are however some common traits which everyone should aim to get right

• Get the bottom line right; Blood sugar, hydration and basic supplementation

• Then individualise afterward
Macronutrient Manipulation – the Tools

• Water: hydration cellular function

• Protein: structure, growth & repair

• Carbohydrate: fuel, short term energy

• Fat: energy storage, fuel & structure
Hydration

Poor hydration is a major issue for athletes

- 3% dehydration
  - 10% loss of strength
  - 8% loss of speed
AND MORE

• Dehydration reduces mental functioning:
  decision making
  reaction times
  concentration
  anticipation
  skill delivery
  task inaccuracies

ENERGY
Memory
STRESS
CRAMPING PROTOCOL

- Dehydration
- Salt - increase
- Magnesium
- Electrolytes
- Lack of fitness CNS fatigue
- Muscular imbalances
- How many single legged calf raises can you do?
## Hydration

<table>
<thead>
<tr>
<th>Training</th>
<th>02/10/05</th>
<th>03/10/05</th>
<th>04/10/05</th>
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<tbody>
<tr>
<td></td>
<td>Sun</td>
<td>Mon</td>
<td>Tues</td>
</tr>
<tr>
<td></td>
<td>p.m.</td>
<td>a.m.</td>
<td>After Lunch</td>
</tr>
<tr>
<td>Player name</td>
<td>600</td>
<td>820</td>
<td>240</td>
</tr>
<tr>
<td>Player name</td>
<td>430</td>
<td>730</td>
<td>380</td>
</tr>
<tr>
<td>Player name</td>
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<td>630</td>
<td>720</td>
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<tr>
<td>Player name</td>
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<td>190</td>
<td>170</td>
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<tr>
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<td>390</td>
<td>630</td>
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<tr>
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<td>760</td>
<td>390</td>
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<tr>
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<td>700</td>
<td>390</td>
<td>140</td>
</tr>
<tr>
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<td>370</td>
<td>610</td>
<td>180</td>
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<tr>
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<td>340</td>
<td>140</td>
</tr>
<tr>
<td>Player name</td>
<td>670</td>
<td>530</td>
<td>340</td>
</tr>
</tbody>
</table>

### Hydration Levels

- **Dehydrated**: >800
- **Warning**: 600-799
- **Good**: 200-599
Principle 3; Water Principles

• Work out requirements
• Drink clean water – reverse osmosis
• Drink alkaline water
• Front load hydration
• Aim to supply adequate electrolytes
• You’ll need 75% of the water with the right electrolytes – fireman study
• Cellular hydration is key to recovery
Rehydration protocol
To become fully hydrated you must follow these simple steps:

Drink *at least 5L of fluid on training days* & *at least 3L on rest days*;

- Drink **500ml of fluid on waking** (before breakfast);
- Have a **drink with every meal**;
- Always replace 1.5 x the fluid lost following exercise:

1. **Hour** of moderate to high intensity exercise leads to sweat loss of 0.5L in **15°C**, thus you need to drink **0.75L** in this temperature;

1. **Hour** of moderate to high intensity exercise leads to sweat loss of 1.5L in **25°C**, thus you need to drink around **2.5L** in this temperature;

- Add a **pinch of salt to all meals**;
- Add electrolytes sachets with 500ml of water **three times per day**;
- Aim to **consume all fluid by 4pm** to limit sleep disturbances;
- **Avoid diuretics** such as caffeine and alcohol;
- Aid heat loss by **limiting clothing layers/ head gear and reducing time in hot environments (limit temperature at home, avoid saunas)**.

*It takes 2 weeks to become fully hydrated*

5% decrease in body mass due to hydration leads to a 30% decrease in endurance performance
Protein

• “Of great importance”

• Roles; building blocks

• Nitrogen retention; protein synthesis

• Protein synthesis (PS) Protein degradation (PD) PS > PD to increase muscle
Not just about muscles;

- Slows down carbohydrate absorption
- Builds neurotransmitters
- Stimulates sympathetic ANS
- Builds hormones
- Sustains immune function
- Builds energy
PRAL

- Potential renal acid load
- Ash analysis limited
- Remer and Manz;
- Net acid load

- Composition, bioavailability and sulfur content
- Low grade metabolic acidosis
- Tool to encourage vegetable consumption
PRAL SCORES

- Meats average: 9.5
- Fish average: 7.9
- Confectionary: 4.3
- Vegetable average: -2.8
- Grain products: 3.5
- Fruits average: -3.1

Adapted from Remer and Manz study (1995, 2001)
# PROTEIN EXAMPLES

<table>
<thead>
<tr>
<th>Body Weight</th>
<th>Minimum Protein Needed at 2.2g/kg</th>
<th>Example foods</th>
</tr>
</thead>
<tbody>
<tr>
<td>85kg</td>
<td>187g</td>
<td>4 x egg whites, 2 x chicken breasts, 1 x tuna steak = 112g</td>
</tr>
<tr>
<td></td>
<td>75g</td>
<td>Shakes, Recovery and Smoothies</td>
</tr>
<tr>
<td>90kg</td>
<td>198g</td>
<td>5 x egg whites, 2 x chicken breasts, 2 x tuna steaks = 138g</td>
</tr>
<tr>
<td></td>
<td>60g</td>
<td>Shakes, Recovery and Smoothies</td>
</tr>
<tr>
<td>100kg</td>
<td>220</td>
<td>5 x egg whites, 3 x chicken breasts, 2 x tuna steaks = 168g</td>
</tr>
<tr>
<td></td>
<td>52g</td>
<td>Shakes, Recovery and Smoothies</td>
</tr>
</tbody>
</table>
Animal Protein and Cancer

- Eat organic or wild meats, fish, fowl and dairy
- Avoid processed meats
- Avoid excessively burnt meats
- Make sure you take probiotics
- Make sure you eat plenty of fiber
- Consider a fiber supplement
- Balance your meat and protein intake with an equal amount of vegetables and fruits
Principle 4; Protein Principles

- Choose organic or free range where possible
- Establish a protein base for each player
- Choose types of protein according to functional needs
- Vary the types of protein according to the time of day and required hormonal response
- Vary the type of protein towards competition day
Correct Selection of Fats

- Promotes lipid peroxidation
- Replenishes muscle triglycerides
- Enhances immune function
- Improves hormonal environment – T levels
- Improves insulin sensitivity  *(Luo J Nutr 1996; 126: 1951-8)*
Ratio n-6 : n-3

- Paleo diet close to 1:1 (Eaton., et al 1992, 1998)
- Total dietary fat intake 90g example;
  - 30g sats, 30g Monos, 30g Polys of which 25g n-6, 5g n-3 = 5:1 ratio
- The addition of 3 tablespoons flaxseed takes Polys up to 75g of which 40g n-6 and 35g n-3 = 1:1 ratio
- fish oils decrease size and number
- corn oil and canola increase size
- trans and lard increase number
Fat Types

- Trans and hydrogenated fats decrease membrane fluidity (Field J Biochem 1998; 253: 417)
- Saturated - may have some use in lean mass acquisition
- Monounsaturated – Inert, decreases cholesterol (Mattson J Lipid Res 1985 26: 194)
- Polyunsaturated – performance focused get ratio right!
- CLA – potential ergogenic, immune supportive & anti-inflammatory
- MCT’s – thermogenic, easily metabolised – functional as coconut oil (Enig, M 2004)
Fat can make you fat!

- Raw nuts = 1 handful a day
- Avocado = 1 per day
- Egg yolks = 2 per day
- Aim for 1/3\textsuperscript{rd} saturated
- 1/3\textsuperscript{rd} monounsaturates
- 1/3\textsuperscript{rd} polyunsaturated; fish oils, oily fish
Guidelines for Fat Intake 100kg

- 33-50g saturated fat =
- 33-50g monounsaturated =
- 33-50g polyunsaturated =

- 2 tablespoons olive oil = 30g mono
- Small Handful of nuts = 20g
- Large Handful of nuts = 50g
- 4 eggs = 20g saturated
- 1 tablespoon coconut oil = 15g
- Teaspoon of oil = 5g
Principle 5; Fat Principles

- Low fat foods are normally very high in sugar
- Higher fat diets are better for testosterone production
- Fat has no impact on insulin
- Fat supplies anti-inflammatory hormone building blocks
- Increase omega 3 sources avoid omega 6
- Never eat high fat high carb in your 90% block
- Functional fats include; coconut oil, fish oils, CLA, flax
- The safe % of trans fats in the diet is 0%
- Fats are heat sensitive – be aware of this
- If you eat high fat, eat low carbs and vica versa
Low GI Diet Benefits

• Higher nutrient density
• More stable blood sugar
• Minimises fat deposition
• Promotes lipid oxidation
• Increased satisfaction
• More stable insulin glucose levels
Classes of Carbohydrates

- **Fibrous**
  - Vegetables Above the ground
  - Low Gl & II
  - Low energy

- **Starchy**
  - Grains & Some root veg
  - Gl & II varies
  - High energy

- **Starch Proteins**
  - Beans & Pulses
  - Low Gl & II
  - Medium energy
Timing of Carbs

- **Fibrous**: Evening
- **Starchy**: Morning
Antioxidant Content of Fruits

Prunes Score Highest in Antioxidants

U.S. Department of Agriculture scientists at Tufts University have ranked fruits by their anti-oxidants levels. Many researchers believe anti-oxidants slow the aging process.

Fruit anti-oxidant score*

- Prunes: 5770
- Raisins: 2830
- Blueberries: 2400
- Blackberries: 2036
- Strawberries: 1540
- Raspberries: 1220
- Plums: 949
- Oranges: 750
- Pink Grapefruit: 483
- Cantaloupe: 252
- Apples: 218
- Pears: 134

*Oxygen Radical Absorbance Capacity is a test tube analysis that measures the total anti-oxidant power of foods and other chemical substances, per 100 grams.

Source: U.S. Department of Agriculture

GRAPHIC BY SAN JOSE MERCURY NEWS
Anti-Nutrients and Empty Calories

- All refined foods
- Sugar (except post training)
- Excess Caffeine
- Alcohol
- Cakes, biscuits and pastries
- Crisps and confectionary

- Soda Pop
- Refined Wheat
- Chips
- Fast and junk foods
- Snack a jacks
- Doughnuts
- Breakfast cereals
- All chemically assisted foods
Principle 6; Carbohydrate Principles

- Different carbohydrates have different energy density and rate of absorption
- Carbs influence insulin more than other commonly consumed nutrients
- Controlling insulin is the key to 80% of performance diet and health issues
- Carbs like other foods can contain allergic elements
- Veggies are best, then berry fruits, then root veggies, then whole-grains – construct the diet accordingly
- Enzymes are a key stone to health
Match Recovery & Muscle Damage

- Training process
- Time between sessions
- Liquid recovery is best
Advanced Recovery

- Specific to Weight
- Specific to Intensity
- Intensive CHO Loading
- Increased Intensity = Increased number of high CHO feedings

- Needs to be high GI?
- Needs to be:
  - Immediately post exercise
  - Within 2 Hours
  - Again 4 Hours later
LOW / MEDIUM INTENSITY RECOVERY – 100kg

- LOW INTENSITY = fairly light to somewhat hard in nature
- E.g. Drills, strides
- To recover from a low intensity session:
  - 25-50g CHO 40g+ Protein
MEDIUM / MODERATELY HARD INTENSITY RECOVERY-100kg

- MEDIUM INTENSITY = somewhat hard to hard in intensity
- E.g. sprints, higher intensity weights sessions
- To recover from a medium intensity session:
  - 35-55g CHO, 40g+ Protein
VERY, VERY HIGH INTENSITY RECOVERY-100kg

- HIGH INTENSITY = Hard to very, very hard in nature
- E.g. matches and extremely hard weight sessions
- To recover from a high intensity session:
  - 50-75g CHO 40g+ Protein
# Recovery Matrix

<table>
<thead>
<tr>
<th>TRAINING INTENSITY</th>
<th>Immediately</th>
<th>Within 1-2 hours</th>
<th>Within 3-4 hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOW</td>
<td>1 scoop of recovery powder in 300mls water</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MEDIUM</td>
<td>2 scoops of recovery powder in 350ml of water</td>
<td>A Medium sweet potato with lunch in addition to routinely consumed foods</td>
<td></td>
</tr>
<tr>
<td>HIGH</td>
<td>3 scoops of recovery powder in 400ml of water</td>
<td>A banana and bowlful of blueberries and yoghurt in addition to……</td>
<td>A large slice of date and walnut cake with fruit smoothie</td>
</tr>
</tbody>
</table>
Principle 7; Recovery Principles

• You must recovery aggressively and appropriately after each session
• Recovery should be graded to intensity, duration, body weight, body fat and body type
• Period of recovery should be lengthened according to intensity and duration of the session
• Intensity = degree of metabolic disturbance
• Recovery requirements need to be viewed in terms of requirements of next exercise session
## Meal Matrix

<table>
<thead>
<tr>
<th></th>
<th>Less Active</th>
<th>More Active</th>
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</thead>
<tbody>
<tr>
<td><strong>Fat Loss</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>PROTEIN</strong></td>
<td>VEGGIES (above the ground)</td>
<td>EFA’s</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Performance Energy</td>
</tr>
</tbody>
</table>
Basic supplement principles

- Particular Need for iron, calcium and other minerals such as zinc during adolescence
- Vitamin D – pandemic deficiency
- Magnesium commonly deficient
- Omega-3 essential fatty acids
- Antioxidants
- A multivitamin & mineral
- Joint care and cartilage support – older athletes

- Adherence
PLAN INTO ACTION PLAN

- Performance Nutrition Summary
- 10 Point Plan and Check List
- Example Day
BACK TO BASICS

- Golden Rules to be Practiced 80-90% of the time and never forgotten;
- Drink enough water / green tea / hydration drinks, never get thirsty!
- Eat Frequently, eat every 2-3 hours no matter what, unless you are sleeping
- Eat Protein every time you eat
- Eat vegetables or fruit every time you eat but eat more veggies than fruit
- Eat starchy carbs every time you eat but eat more around time of the day when you are more active (breakfast and lunch) and less or none when you are less active
- Recover aggressively and appropriately after every session
- Eat whole-foods, low GI all the time except post-training when high GI foods are better for speedy recovery
- Eat fat, but eat the right kind of fat – from oily fish, nuts and seeds, olive oil and omega eggs
- Avoid ‘empty’ foods which contain calories but no goodness; doughnuts are a good example of these types of food
- Remember to enjoy your foods and practice the 80:20 rule or 90:10; this means of 42 weekly meals and snacks, 4 can be whatever you want if you are being strict 90% of the time and 8 can be naughty if you are being strict 80% of the time
CHECK LIST

- Am I thirsty?
- When did I last eat?
- Did I eat Protein with that?
- Were there veggies or fruit with that?
- Did I eat Starch according to my training?

- Were there ‘good’ fats with the meal?
- Am I eating sweets all the time even when I have not trained?
- Do I eat wholefoods?
- Am I thirsty?
EXAMPLE DAY

- Porridge & Protein
- Sardine Omelet with red onion
- Eggs and beans on toast
- Cottage cheese & apple
- Fruit / Protein Bar
- Open Tuna Sandwich
- Recovery Shake and fruit
- Spinach Salad with chicken and walnuts

- Rice, Chicken and Peas
- Mackerel, potato and broccoli
- Sugary drink and fruit and a protein bar
- Steak and Spinach
- Salmon and green beans
- Lamb and roasted veggies
- Cold meats and raw veggies
- Cottage cheese