THE SCIENCE OF SUPPLEMENTS, A to Z, PERFORMANCE ENHANCERS OR WISHFUL THINKING.

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ENDURANCE ATHLETES USING SUPPLEMENTS

1. 2009: 489 of 674 runners at Western States and Vermont. (1 prepublication Hoffman & Fogard)
   A. 75.6% use vitamins or supplements
   B. 58% Multivitamins, 35% Glucosamine/Chondroitin, 31% Fish Oil, 25% Anti-Oxidants, 9% Calcium, 5% Coenzyme Q10

2. 1997: Comrades: (2)
   A. Vitamin & Mineral Supplements
      1) 78% females 2) 62% male
   B. Energy Supplements
      1) 48% Females 2) 59% male
WHERE DO THEY GET INFORMATION?

STUDY LOOKING AT 326 TRIATHLETES: 176 IRONMAN AND 152 OLYMPIC DISTANCE (3)

1. 93% FROM THE INTERNET
2. 86% FROM FRIENDS & TRAINING PARTNERS
3. 59% FROM COACHES & TRAINERS
4. Not usually from professionals.
• So Powerful It’s Almost Illegal… Run Farther, Faster and Feel Better Without Changing Your Diet or Training — Northwestern State Univ. Professor Breaks the Code and Discovers the Secret Weapon to Super Human Strength, Speed and Endurance

• EPO-BoostTM does not contain Epogen®, Erythropoietin, EPO or any banned substances by WADA 2011 list
GENERAL STUDY PROBLEMS

• 1. SMALL SAMPLES
• 2. OFTEN NO CONTROL GROUP
• 3. DON’T CONTROL CONFOUNDING FACTORS
• 4. ENDURANCE DISTANCES FAR SHORTER TIMES THAN FOR ULTRADISTANCE ATHLETES.
• 5. FAR MORE STUDIES FOR ENDURANCE CYCLISTS, FEW FOR RUNNERS
• 6. OFTEN MALE DOMINATED
ALCOHOL
ALCOHOL

1. 10 WOMEN GAVE THEM A DRINK.
2. RODE A STATIONARY BIKE FOR 30 MINUTES.

DECREASED PERFORMANCE
HIGHER HEART RATE

1. MICE GIVEN A DIET HIGH IN RESVERATOL
INCREASED ENDURANCE
ALMONDS
ALMONDS

• 12 Chinese Cycling and Triathletes (4)
• 20 minutes of maximum exercise
• 1. 75 grams of Almonds a day for 4 weeks
• 2. Control was 75 grams of sugar cookies.
• 3. 5.2% increase in cycling distance
• 4. 7% increase in plasma glucose.
VITAMINS

1. VITAMIN C
2. VITAMIN B-6
3. VITAMIN E
VITAMIN C
1. One study: 500 mgs of Vitamin C taken before 60 minutes of strenuous exercise.
2. 85% recovery of muscle strength versus 75% in control group at 24 hours.
3. One Study when combined with Vitamin E lowered measures of oxidative stress. (5)
4. No studies have shown benefit on actual performance.
VITAMIN B-6

• AVOCADOS
VITAMIN B-6

1. No effect on glucose concentrations.
2. No effect on Plasma Lactate concentrations.
3. Plasma Free Fatty Acids were between 8 & 25% lower.
4. No effect on catecholamines (epinephrine & norepinephrine).
5. Amino acids: Tryptophan levels lower.
   • No difference in time to exhaustion (6)
VITAMIN E

1. STUDY OF 90 MALE MARATHON RUNNERS BETWEEN 25 & 35 YEARS OLD.
   Doses of 1,000, 1,200 & 1500 Inter. Units.
2. 670 sled dogs in 1998 Iditarod
   Dogs with higher prerace plasma Vitamin E levels more likely to finish.

Multiple studies have shown no benefits. (7)(8)(9)

Vitamin E & Altitude Performance Possible
FRUIT/BERRY/VEGETABLE JUICE

• 1. 41, 18 to 35 year olds pretreated for 4 weeks (10)
• 2. Half given a FBV concentrate, Half placebo
• 3. Had them do repetitive elbow flexion with non-dominant arm.
• 4. Found decrease in blood oxidative stress markers (e.g.: Glutathione, blood protein carbonyls).

But no difference in function/performance.
CAFFEINE

34 studies on effects on strength or endurance. (11)

Largest 188 males, next 53 (31 M, 22 F), 23 only involved males.

Improved maximal voluntary contraction primarily in knee extensions by 7%.

Improved muscular endurance by 18%.
ZINC

1. NOT GOOD STUDIES

2. REGARDLESS DO NOT EXCEED 40MG PER DAY OR MAY DECREASE HDL CHOLESTEROL AND DECREASE ABSORPTION OF IRON AND COPPER.
NO PROOF FOR MANY OTHERS

- BEE POLLEN
- CARNITINE
- CHROMIUM PICOLINATE
- CEONZYME Q10
- GINSENG
- NIACIN (B3)
- PYRUVATE
- VANADIUM
BOTTOMLINE

• CAFFEINE probably helps during performance. Works better with a couple of weeks prerace washout.

• VTIAMIN C may help recovery but no evidence it helps actual performance.

• If you are racing sled dogs try Vitamin E, and may help at altitude.

• For racing mice try red wine or resveratol.
REFERENCES

NEW MEXICO