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Plant-based and Powerful: What We Know About Vegan Athletes

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Matt Ruscigno MPH RD reports no relationship with industry to disclose relative to this CME activity.

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Why Vegan?

- Traditionally: concern for animals
- Health: fruits, vegetables, beans, whole grains
- Environmental impact
- Athleticism?

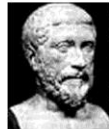


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Pythagoras and beyond

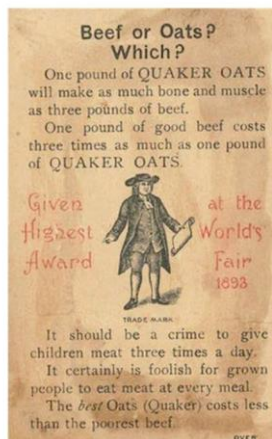
“As long as man continues to be the ruthless destroyer of lower living beings he will never know health or peace.” in 400 BC.



- Long philosophical tradition regarding the lives of animals
- Peter Singer, Carol Adams

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Academy of Nutrition and Dietetics Position Paper

“Appropriately planned vegetarian diets, including vegan diets, are healthful, nutritionally adequate, and may provide health benefits in the prevention and treatment of certain diseases...[and] are appropriate for individuals during all stages of the lifecycle, including pregnancy, lactation, infancy, childhood, adolescence and for athletes.”

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Research

Vegetarians have been under intense research for decades

Adventist Health Study 2- Cohort of 100,000; about 50% vegetarian, 10% vegan

Oxford EPIC Study- Emphasis on vegetarians

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Positive health outcomes

Lower BMI- leaner body mass

Lower rates of heart disease, stroke, type-2 diabetes, some cancers (maybe?)

Possible mechanisms

More soluble and insoluble fiber

More phytochemicals, anti-oxidants

Less saturated fat

Whole grains, fruits, vegetables, nuts and seeds

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Plant-based recommendations

- Network for a Healthy California, USDA

- American Heart Association

“Choose foods like vegetables, fruits, whole-grain products and fat-free or low-fat dairy products most often.”

- American Diabetes Association

“Fill the largest section of your plate with non-starchy vegetables.”

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Scott Jurek wins the 2006 Badwater Ultramarathon

- 135 mile running race through Death Valley in July
- Wins 2 straight years, sets the course record
- Credited vegan diet



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Change in perception of vegan diets

- From ideological vegans doing sport to an advantageous diet
- Engine 2, Rich Roll, Scott Jurek
- From body builders to mixed martial artists
- Even BBQ?

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Jehina Malik- vegan since birth



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Sports nutrition

- Total calories
Mechanism: fuel for cells, muscles
Requirements: varies by life stage, activity level
Deficiency: muscle degeneration, lethargy
Sources: carbohydrate, fat, protein
Chris Carmichael recommends
65% carbohydrate, 22% fat, 13% protein

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Carbohydrate

- Academy / SCAN recommendations
 - 45 to 65% of calories
- American College of Sports Medicine
 - 6 to 10 grams/kg body weight
- Paleo for Athletes
 - 45 to 55% of calories (!)

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Protein

Regulation/growth of cells, organs, muscles
 *Requirements: 0.8-1.7g per kg body weight or 10-25% of total calories
 Deficiency: muscle mass loss, fatigue

“Meet daily needs for protein and essential amino acids by eating a variety of plant-based protein sources.”
 -SCAN DPG

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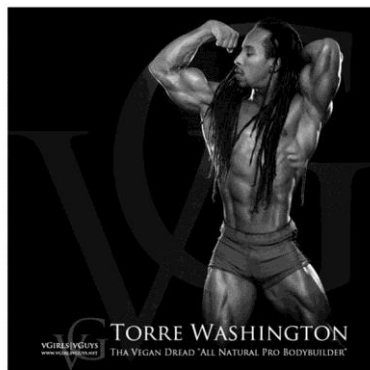
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Even more protein...

- Plant foods contain all of the essential amino acids
- Need to combine proteins is a myth
- Term ‘incomplete protein’ is misleading
- Legumes, nuts, seeds, whole grains and more
- Spinach is 30% protein, 1 cup cooked = 5 grams
- Protein Primer on nomeatathlete.com

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Protein in plant foods

FOOD	AMOUNT	PROTEIN (gm)	PROTEIN (gm/100 cal)
Tempeh	1 cup	31	9.6
Soybeans, cooked	1 cup	29	9.6
Seitan	3 ounces	21	17.5
Lentils, cooked	1 cup	18	7.8
Black beans, cooked	1 cup	15	6.7
Kidney beans, cooked	1 cup	15	6.8
Chickpeas, cooked	1 cup	15	5.4
Pinto beans, cooked	1 cup	15	6.3
Lima beans, cooked	1 cup	15	6.8
Black-eyed peas, cooked	1 cup	13	6.7
Veggie burger	1 patty	13	18.6

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Iron

- Iron needs of athletes and plant-based eaters are increased
- Non-heme iron is less well absorbed...
- Vitamin C increases 5 fold!
- Vegans may have higher iron intake than vegetarians
- Variety of sources increases absorption

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Plant sources of iron

Table 1: Iron Content of Selected Vegan Foods

Food	Amount	Iron (mg)
Soybeans, cooked	1 cup	8.8
Blackstrap molasses	2 Tbsp	7.2
Lentils, cooked	1 cup	6.6
Spinach, cooked	1 cup	6.4
Tofu	4 ounces	6.4
Bagel, enriched	1 medium	6.4
Chickpeas, cooked	1 cup	4.7
Tempeh	1 cup	4.5
Lima beans, cooked	1 cup	4.5
Black-eyed peas, cooked	1 cup	4.3
Swiss chard, cooked	1 cup	4.0

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Calcium

- Vegans should aim for recommendations
- Animal protein not related to osteoporosis
- Variety of sources
 - Leafy greens (bok choy, kale, mustard)
 - Fortified non-dairy milks, orange juice
 - Calcium-set tofu, blackstrap molasses

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Bone Health

- Complex! Nutrition and exercise
- Nutrients involved- magnesium, phosphorus, potassium, vit D, vit K, amino acids, lysine and hydroxylysine
- Legumes, meat alternatives beneficial

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Bone health and exercise

- Strong evidence
- Weight bearing (and strength training!)
- Tension of muscle and bone increases density
- Increase in balance and stability

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Sample meal

- Whole wheat pasta with broccoli, olive oil and tomato sauce
67% carbohydrate, 20% fat, 13% protein
< 800 calories, 32g protein, 22g fiber
167% vit-A, 418% vit-C, 19% calcium, 45% iron
- Add 0.5 cup lentils
68% carbohydrate, 17% fat, 15% protein
41 grams protein, Iron 63%

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Non-nutrients in plant foods

- Phytochemicals and antioxidants
 - Reduced inflammatory markers
 - Same function in cardiovascular disease prevention
- Nitric oxide- beets, cacao, plant foods
 - Increase vasodilation and oxygen flow to muscles
 - Increased time to exhaustion

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The future of nutrition is plants

- 25,000 (!) different phytochemicals with potential disease fighting properties

Carotenoids- carrots
 Lycopene- tomatoes
 Isoflavones- soybeans
 Flavonoids- cacao



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Nutrition for plant-based eating

- Nutrients are derived from more diverse foods than the Standard American Diet (SAD)
- General rule: eating smaller amounts of nutrients more often
- Fruits and vegetables are nutrient-dense: many nutrients for fewer calories. BIG portions!
- Phytochemicals: non-nutritive benefits

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Creating plant-based meals

- Grains, vegetables (leafy!), legumes, nuts or seed
- Emphasis on whole foods
- Faux meat/cheese as complements
- Variety, variety, variety
- Fruit and salads can be meals!
- Discretionary calories...

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Tips for counseling

- Some vegans may overly restrict:
 organic, non-GMO, local, raw, juice
- Fat- plant fat is good
- Meal timing
- BIG portions of vegetables

It's more about what they eat
than what they don't eat.

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Benefits of plants

- Great carbohydrate to protein ratio
- Fruits and vegetables are hydrating
- Anti-oxidants that aid recovery
- Healthy fats for increased caloric needs
- Easy to eat

Many athletes are eating
plant foods most of the time!

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Strongest Hearts

- Educational video series on plant-based athletes
- Created with a professional filmmaker
- 5-20 min episodes showing how athletes eat, cook and train
 - Nutrition lessons, recipes, food recs
 - Tips for competing in specific discipline
 - All episodes at StrongestHearts.org

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Strongest Hearts 11: Vegan Track Cyclists
Meet 3 vegan track cyclists: Kevin Selzer, Jack Lindquist and Zak Kovalek. See full post here, including Kevin's amazing lasagna recipe: truelovehealth.com/2013/09/17/day-in-the-life-11-vegan-track-cyclists/

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Vegetarian Nutrition
a dietetic practice group of the American Dietetic Association
eat right.

RD Resources for Professionals:

Sports Nutrition for Vegetarians

Food nutrition is vital for optimal exercise training and performance.

To train and perform optimally, athletes of all levels—from recreational to elite—should consume a diet comprised of wholesome foods high in carbohydrate (>50% of energy), low to moderate in fat (20-35%) and adequate in protein, vitamins, minerals, and fluid. A vegetarian diet easily meets these needs and offers additional health and performance advantages. The key is to consume a variety of vegetarian foods including whole-grains, fruits, vegetables, legumes,

for the upper end (8-10 g/kg). Foods high in complex carbohydrates also contain fiber, protein, vitamins, and minerals and offer the best nutrients for enhanced performance.

Dietary Fat

In the past, athletes have adopted very low-fat diets with the belief that they can lose fat mass. Such diets, however, can impair performance and have negative health consequences such



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Nutrition resources

Vegetarian Sports Nutrition

-Enette Larson-Meyer, PhD, RD

Fueling the Vegetarian Athlete -Joel Fuhrman, MD

Curr Sports Med Rep Vol 9, No 4, pg 233-41

Vegan For Life -Ginny Messina, MPH, RD; Jack Norris, RD

Plant-powered Diet -Sharon Palmer, RD

Vegetarian Nutrition (.net)

Vegan Health (.org)

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Thank you!

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Protein References

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