


High Performance Nutrition Soccer: U 16

National Training Centre
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Soccer

- ✶ Training diet
- ✶ Fluid schedule
- ✶ Pre game meal/snacks
- ✶ Recovery fluids & fuels
- ✶ Eating out & Fast Foods
- ✶ Injury & Nutrition
- ✶ Dietary Supplements
- ✶ Ergogenic aids



Athlete's Checklist


1. Skip meals regularly?
2. Adequate daily fluids + extra for training needs?
3. Constantly feel fatigue or low in energy during workouts?
4. Sweat heavily during training & competition?
5. Crave sweets and high fat snacks?
6. Feel dizzy, light headed during practice?
7. Get injured frequently and are slow to recover?
8. Have inconsistent performance in training and competition?
9. Avoid major food groups? Follow a high protein, low carb diet ?
10. Wonder if you need a supplement/ergogenic aid or use them inappropriately?

Check the points that apply to you. Even one check can mean decreased performance



Most Common Nutrition Issues

- ✶ Not eating enough food FUEL
- ✶ Not drinking enough FLUIDS
- ✶ Lack of understanding re:
 - eating and weight
 - eating and fatigue
 - eating and muscle gain
 - eating and risk of injury & recovery
 - use of dietary supplements/ergogenic aids




Under eating, Over exercising

If Energy input < Energy output
not eating enough exercise too much

you will be **LOW in energy**
inability to train at optimum

low in B vitamins, Calcium/D, Iron, Zinc



Basic Fuels

✶ Carbohydrates	4 Kcal/gram	muscle fuel
✶ Protein	4 kcal/gram	helps build
✶ Fat	9 Kcal/gram	satiety
✶ Alcohol	7 kcal/gram	empty Kcal

Kcal = Calories

How much do athletes need?

	Per cent of Total Kcal	
☀ Carbohydrates	60%	(55-70%)
☀ Protein	15%	(12-18%)
☀ Fat	25%	(20-30%)

General Recommendations overall



Muscle Fuel... Carbs keep glycogen stores high

- Multigrain breads, bagels, rolls, crackers,
- Whole wheat pitas, tortillas
- Muffins, banana bread
- Granola, energy & high carb sports bars
- Fortified cold cereals & oatmeal
- Trail mix: cereal, dried fruit, nuts/seeds
- Pasta, rice, couscous, grits, perogies
- Toaster waffles, pancakes
- Oatmeal cookies, fig newtons ...
- Potatoes, corn, green peas, winter squash
- Baked beans, chili, chickpeas, lentils
- Thick crust pizza, panini/sandwich, wraps
- Fresh, frozen, canned, dried fruits & juices
- Milk, choc milk, yogurt, milk puddings
- Chunky soups (meat, starchy veg, noodles)
- Micro lite Popcorn, baked chips, pretzels



Recovery: 4 Rs

1. **Re**place muscle glycogen (Carbs)
2. **Re**pair muscles (Protein)
3. **Re**plenish (Fluids/electrolytes)
4. **Re**st & Sleep (8 hr+)



Recovery Carbs

How much Carb do you need?

Your weight:
 ___ lbs x 1.5 g = ___g
 of Carbs



Choose fluids and foods
 in amounts that add up to
 carbs calculated above.

Recovery Carbs

How much Carb do you need?

Example:
 84 Kg x 1.5 = 129 grams Carb
 (185 lbs)

Sport drink 500 ml = 30-36 g
 Applesauce 1 ½ cups = 90g
 example #1 120-126 g

Chocolate milk 500 ml = 62 g
 Sub sandwich 60g
 example #2 122 g



Not the Atkin's Wrap!

Recovery Carbs 1.5 g Carb/Kg


How much Carb do you need?

Example:
 185 lbs ÷ 2.2 = 84 Kg
 84 x 1.5 = 126 grams Carb

Gatorade 1 litre = 60 g
 Power bar 1 = 43 g
 Choc milk 1 C. = 31g
 134 g



New evidence: Milk & Muscle Building



Chocolate milk ... for recovery

Protein... for building and repair

- Animal sources
 - Lean meat, chicken, fish
 - Milk, yogurt, cheese, eggs
- Plant sources
 - Soy protein, tofu, soy nuts
 - Whey, casein, soy powders
 - Legumes: kidney beans, chick peas, lentils as soups, stews, veg. chilli, three bean salad ...

½ cup legumes = 1 oz meat
chicken
fish


How much protein?

Average adult	0.8 g/Kg	Body Weight
Adolescent	1.5 g/Kg	
Endurance athlete	1.2 - 1.4 g/Kg	
Strength athlete	1.6 - 1.7 g/Kg	

Position Paper 2000: Nutrition and Athletic performance

How to Build Muscle

- Don't skip breakfast
- Need 500 Kcal/day extra
- Get enough sleep/rest
- Don't forget carbs
- Protein 1.5-1.7 g/Kg
- Growing athletes have higher needs initially
- Get sound advice if using protein supplements
- Strength training program ..



...but not quite this ripped!

How Much protein?

Example: Ht 6' Wt 160 lbs Male Age: 18 Goal: 178 lbs

Food Group	# Sv	Protein g	
Milk/prod	4 x 8 =	32 g	4 c. milk
Meat/Alt	9 oz x 7 =	63 g	4 oz ham, 5 oz chicken
Grain/prod	14 x 3 =	52 g	4 bread, 2C cereal, 3 C pasta
Vegetables	4 x 2 =	8 g	2C salad, 2C stir fry veg
		Total 155 g	more than enough

160 lbs ÷ 2.2 = 73 Kg
73 x 1.7g/Kg = 124 g protein needed + adequate daily calories (including fats & Other foods)

Strength athletes: 1.6-1.7 g/Kg body wt.

What about whey protein?


- Ex. 1 scoop = 25 g whey protein
- Whey is a complete protein with all essential amino acids

9 oz meat, chicken, fish = 9 x 7 = 63 g protein
4 milk/products = 4 x 8 = 32 g
14 Grain/starches = 14 x 3 = 52 g
4 Vegetables = 4 x 2 = 8 g

155 g + 25 g = 180 g protein
80 Kg x 1.7 g/Kg = 136 g don't need whey as diet is adequate

Protein Powders? Not really needed


- Whey, casein, soy
- Amino Acids:
 - Branch chain AA
 - Glutamine
 - Arginine
- Homemade shakes
- Liquid supplements



Whey protein isolate

Fats ... choose beneficial ones

- Beneficial Fats** -more often
 - Monounsaturated** Olive oil, Canola oil, peanut oil, avocado
 - Polyunsaturated** corn, sunflower, safflower oils including
 - Omega-3 fats:** canola oil, soybean oil, flaxseeds/oil, walnuts, fish
- Saturated Fats- Less often!** High fat meat, dairy, butter cheese, ice cream, sour cream, rich sauces
- Trans Fats-** fries, chips, pies, cakes, cookies, pastries, deep fried battered dipped chicken & fish ...



French fries = Trans fats
Eat less often!!!!

How much fat?

Per cent of Total Kcal

- Average adult 30% or less
- Athletes 20-30%
- No benefit to use <15% Kcal (low fat diets out of vogue)

Athletes need about 1 g Fat/Kg Body Wt.
Growing athletes need more
Position Paper 2000: Nutrition and Athletic performance

Training Day menu



- Breakfast** Cereal, milk, toast, fruit/juice, margarine/butter/jam, coffee
- Snack** fruit & yogurt OR banana, toast, peanut butter
- Lunch** 1-2 turkey sandwiches, garden salad/dressing, fruit/juice, milk
- Snack** Energy bar & sport drink OR granola bar & juice/milk/shake
- Dinner** 3-5 oz meat, chicken, fish, 2-3 C rice/pasta/potato, veg, fruit
- Snack** milk, cereal OR fruit dessert, yogurt OR Fruit smoothie, granola bar, bran muffin, oatmeal cookies with milk, 100% fruit juice, fresh fruit


Milk: 3-4 Grains:14-16+ Meat/Alt: 6-9 oz Fruit: 6+ Veg: 4-5 Fat: 7-9+

Example .. Based on exchanges

	# sv	Kcal/sv	
Milk:	3	3 x 110 =	330
Grains:	14	14 x 80 =	1120
Meat/Alt:	9 oz	9 x 55 =	495
Fruit:	6	6 x 60 =	360
Veg:	4	4 x 25 =	100
Fat:	7	7 x 45 =	315
			2720 Kcal


1 sv = 1 exchange similar to Food Guide serving

Example: 160 lbs x 17 Kcal/lb (active) = 2720 Kcal



What's your hydration I.Q?

- Is thirst an accurate measure for hydration?
- How do you know if you are dehydrated?
- How do you know if you are drinking enough?



What's your hydration I.Q?

- ★ Is thirst an accurate measure for hydration?
 - NO, by the time you are thirsty you are already 1-2% dehydrated
- ★ How do you know if you are dehydrated?
 - Dehydration-** dark coloured, small volume of urine
 - Well hydrated-** light coloured, plenty of urine
- ★ How do you know if you are drinking enough?
 - 1 gulp = 1 oz (30 ml) 4 gulps = ½ cup
 - You need 4-8 gulps every 15-20 minutes during active play

Fluids ... for hydration & mental alertness

Before

- 2 hours 2-3 cups cool water
- 15 min. 1-2 cups cool water


During

- Every 15 min ½ - 1 cup cool water or sports drink

After

- For each lb. sweat loss 2-3 cups
- Cool water, sports drink, fruit juice

1 cup = 250 ml 1 gulp = 1 oz. (30 ml)



Dehydration is a major cause of fatigue
2% sweat loss can decrease performance by 6-7%.

Sport Drink... facts

- ★ When to use:
 - ★ **Before** (maybe used)
 - To prevent low blood sugar and provide ready source of energy
 - ★ **During**
 - To prevent low blood sugar
 - Prevent fatigue & injury
 - ★ **After** To replace fluids, carbs and electrolytes for recovery



Sports Drinks ... before, during, after

What to look for:

- ★ 6-8% carbs is **ideal for RAPID absorption:**
- 14-18 g Carb/250 ml simple sugars, high Glycemic Index
 - ie. Gatorade and Powerade Standard Sports Drinks (Canada)
- ★ **Electrolytes (sodium & potassium)**
 - Stimulate the drive to drink -- assuring complete rehydration
 - Replace sweat losses
- ★ **Favourite Flavor – tastes good**
 - Will drink more to achieve maximum hydration vs water alone

Can be used before, during and after training or competition

Fluids & Electrolytes

Drink	Serv	CHO g	%	Cal	Na+	K+
Fruit Juice	250 ml	37	15	115	3	115
Cola	250 ml	27	11	93	9	2
Iced tea	250 ml	22	9	85	-	68
Lemonade	250 ml	32	13	110	14	36
Fruit punch	250 ml	32	13	123	58	66
Gatorade	250 ml	15	6	65	110	30
Powerade	250 ml	18	8	70	55	30
GatorLode	250 ml	50	20	193	62	Vit C, 4 Bs


250 ml = 1 cup CHO = carbohydrate Na+ = sodium K+ = potassium

Fluids

Did you know?

600 ml cola = ___ tsp sugar?

High sugar drinks before or during exercise can cause cramping, bloating and stomach upset



Sports Bars . . . high carb, mod protein for recovery

Brand/Type	Kcal	Carb	Pro	Fat	Vit/Min
⚡ Power bar	220	40	8	4	yes
⚡ Gator Bar	261	47	7	5	yes
⚡ Breakfast Bar	140	27	2	3	yes
⚡ Granola Bar	92	15	2	3	no
⚡ High protein Bar	297	39	24	5	yes/no
⚡ Balance Bar	191	22	14	6	yes



Source: Langley MS, RD

Energy Bars to assist performance

- ⚡ Before: Should supply simple & complex carbs for immediate and long lasting energy
1 bar about 1-2 hours before play
- ⚡ During: Not always recommended
Sometimes using during half time to finish strong
- ⚡ After: To help replace muscle glycogen and speed recovery. 1 bar 30-60 min after exercise after fluids are replaced is the best time.

Does Red Bull give you wings?

⚡ 8 oz can = 250 ml	
⚡ Sugar	27 g
⚡ Caffeine	80 mg
⚡ Taurine	1000 mg
⚡ Glucuronolactone	600 mg
⚡ Vitamin B6	5 mg
⚡ Niacin	20 mg



Claims:
To boost energy and concentration

NOT RECOMMENDED For Youth

High sugar intake can delay gastric emptying and intestinal absorption
Do not take right before exercise may spell disaster !

Alcohol... effects on performance:

Limits skills that require:	Decreases:
⚡ Accuracy	•Strength
⚡ Balance	•Power
⚡ Hand to eye coordination	•Speed
⚡ Information processing	•Muscular endurance
⚡ Reaction time	•Cardio endurance

Alcohol 7 Kcal/gram

⚡ CNS depressant	Adult men: 2 units/day max
⚡ Diuretic → fatigue	1 unit is:
⚡ Loss of B vitamins	•1 beer 12 oz
⚡ ↑ blood fats (Chol, TG)	•1 wine 5 oz
⚡ ↑ blood pressure	•1 mixed drink 1.5 oz
⚡ ↓ calcium/bone mineral	gin, rum, whiskey, scotch, vodka
⚡ ↑ weight & fatty liver	
⚡ ↓ heart function	

CNS = central nervous system

Alcohol... athletes and recovery

After competition, alcohol:	Overall effect of alcohol:
⚡ Interferes with reloading muscle glycogen	<i>Decreases ability to train and compete at peak performance</i>
⚡ Delays recovery	
⚡ Delays healing of injury	

Nutrition & Injury

- ☛ Dehydration and Poor nutrition
- ☛ Fatigue Lack of energy
- ☛ Higher risk for injury Stress to perform

- ☛ Injury – delayed healing, slow recovery
- ☛ Adequate calories, protein, Vit. A,C,E, Bs, Zinc, Calcium, Vit.D etc.



Pre-Game meal: basics

- ☛ To prevent low blood sugar
- ☛ To pacify your mind
- ☛ To fuel your muscles
- ☛ To settle your stomach
- ☛ Psychological preparation



Pre-Game meal: basics

- ☛ Enough energy to avoid playing hungry
- ☛ Familiar foods you believe “make you win”
- ☛ High carb, moderate protein, low fat
- ☛ Relatively low in fibre & spices
- ☛ Eaten ~3 hrs in advance in a relaxed atmosphere



Pre-Game meal easy to digest

Example: High in carb, moderate protein, low in fat

3 cups	Cooked pasta
3-4 oz	Chicken breast
2 cups	Tossed Salad
1-2 Tbsp	Italian dressing
1-2 slices	Italian bread
1 pat	Butter/margarine
8 oz	Fruit juice or sport drink
1 serv	Fruit or low fat frozen yogurt/fruit ice
	WATER

Carb: 60-65% Protein 15-20 % Fat 205 %

Pre-Game Snack Ideas

- ☛ Toast, jam and milk
- ☛ Cereal, milk, banana
- ☛ Chocolate milk or fruit yogurt and banana
- ☛ Smoothie with milk/yogurt and fruit
- ☛ Shake with fortified soymilk and fruit
- ☛ Applesauce, bread and butter/soft margarine
- ☛ Sandwich with chicken/turkey and apple juice
- ☛ Leftover spaghetti/meat sauce and Italian bread
- ☛ French bread, jam/honey and milk or juice
- ☛ Sport drink or energy bar (at least 1 hour in advance)
- ☛ Granola bar and yogurt/milk or sport drink/fruit juice



Dietary Supplements

Vitamin/mineral
Calcium
Iron
Zinc
B Complex
Vitamin C
Vitamin E
Whey protein
Glutamine



Get your nutrients from REAL food!


Key Nutrients for Growth & Health

Calcium, Vitamin D, Iron, Zinc, Magnesium
 B Vitamins: thiamin, riboflavin, niacin, B6, B12, folate, biotin, pantothenic acid
 Fat-soluble vitamins: A, D, E, K, essential fatty acids
 Water

Calcium & Vitamin D

Food sources:		Role:
Milk	250 ml	Builds strong bones/teeth
Yogurt	175 ml	Muscle contraction
Soy Drink	250 ml	Nerve conduction
Cheese	50 grams	Normal blood clotting
		Regulates heartbeat
		Protects lining of colon
		Healthy blood pressure
		Other roles: Vitamin D


Recommended: Teens
3-4 servings/day
 Milk & Alternatives



Iron

Role:	Food sources:
<ul style="list-style-type: none"> ✶ Make red blood cells ✶ Carry oxygen to cells ✶ Help prevent fatigue ✶ Promote high energy for training and performance 	Lean beef Chicken leg & thigh Canned Salmon Clams/oysters/mussels Fortified Bkfst cereal Dried fruit Legumes: beans, peas, lentils Dark green leafy veg Nuts/seeds Whole egg (yolk) Wheat germ

2-3 servings/day
Meats & Alternatives




B Vitamins

✶ **Co-factors for Energy**

MAJOR SOURCE:

Fortified whole grain breads and cereals
 (thiamin, niacin, riboflavin, folic acid ... also iron, fibre and



Lean meats, chicken, fish/seafood (B6, B12 ... also zinc)
 Leafy vegetables, oranges, strawberries, canteloupe (folate ...also antioxidants, vitamins, minerals, fibre)

Ergogenic Aids

Ask yourself:

- ✶ Does it work?
- ✶ Is it safe?
- ✶ Is it legal?
- ✶ Is it ethical?

Ergogenic = work enhancing



creatine



ephedrine
Banned substance



High protein bars



Amino acids

C. C. E. S.

Canadian Centre for Ethics in Sport
 Centre canadien pour l'éthique dans le sport

www.cces.ca

Athletes always bear the ultimate responsibility for the products they ingest.

Creatine

- ✦ Effective? Yes
- ✦ Legal? Not Banned/Wada
- ✦ Safe? Long term unknown
- ✦ Ethical? Controversial
- ✦ Not recommended if <18 yr.
- ✦ Be wary of protein powders that could have unlisted/banned ingredients.



Ergogenic Aids

- ✦ Creatine
- ✦ Protein & amino acids
- ✦ Herbals (unregulated)
- ✦ Prohormones & Steroids
 - nandrolone (illegal)
- ✦ Energy drinks/caffeine
 - Red Bull, Rock Star ... (stimulants)



Lean red meat has creatine


Ergogenic Aids

Before you act make sure:

- ✦ Food and fluids are adequate to meet training needs
- ✦ Carbs 60%, Protein 15-20%, Fat 20-30%
- ✦ Ask a Registered Dietitian/Sports Nutritionist to assess your diet to make sure you are getting the "right stuff".




Risk for Developing Eating Disorders




- ✦ Awareness of their body
- ✦ Belief that must have low body weight and low body fat .. leads to dieting
- ✦ Lack of knowledge about sensible weight loss and optimum energy to train
- ✦ Mixed messages about desired weight and peak performance

Female Athlete Triad

- ✦ Disordered Eating
- ✦ Amenorrhea
- ✦ Osteoporosis



4 Nutrition Goals



- ✦ Eat enough food/calories
 - 3 meals & 3-4 snacks per day
 - Pack sport bag with fluids & snacks
- ✦ Eat enough carbs, especially for Recovery
 - Grains/Starch: 10-12+ Veg: 3-4 Fruits: 3-4+ Milk/alt 3-4 daily
- ✦ Adequate protein and essential fats
 - total calories are key to maintain or build lean body mass
- ✦ Drink enough fluids
 - Water: 3-4 litres or more/day total from:
 - Water, Milk, 100% Fruit/Veg Juice, Sport drink ...

Fast Foods... for health & performance

Quick Shopping Tips:


- Whole grain breads/cereals
Cold and hot cereals, pitas, tortillas, muffins, bagels, oatmeal cookies, popcorn, toaster waffles, rice, pasta
- Milk, yogurt, cheese
- Fresh fruits & Vegetables
Salad greens, carrots, peppers, broccoli, frozen mixed, potato
- Lean red meat, chicken, fish
- Baked beans, chili, split pea soup, minestrone soup, lentil soup
- Olive & canola oil, soft margarine, butter, nuts/seeds, salad dressing, mayo, peanut butter, jam, energy bars



Be label savvy

Fast Foods

Instead of	Choose ...
Deluxe pizza/double cheese	Spaghetti/meat sauce 3 cups
6 regular beers or large colas	Garden salad, large
	Italian bread, 2-4 slices
	Olive oil, 2 tsp
	Fruit juice 12 oz (750 ml)
	Choc/vanilla ice cream 2 scoops



Kcal: 1837	Kcal: 1888
Carb: 151 g 33%	Carb: 292 g 61%
Pro: 56 g 12%	Pro: 52 g 11%
Fat: 52 g 26%	Fat: 55 g 28%
Fibre: 10 g	Fibre: 20 g


Fast Foods

Instead of	Choose ...
Big Mac	Plain quarter pounder
Large fries	Chocolate milk 1%, 500ml
Choc shake	Garden salad/Low cal dsng
Ketchup 2 Tbsp	2 cookies

Kcal: 1338	Kcal: 1370
Carb: 173 g 51%	Carb: 197 g 57%
Pro: 44 g 13%	Pro: 52 g 15%
Fat: 53 g 35%	Fat: 43 g 28%
Fibre: 10 g	Fibre: 11 g

Fast Foods

Instead of	Choose ...
Full pork back ribs	Roast beef sub
3 regular beers	Milk 1%
Large french fries	Apple or banana
	Garden salad/dress
	Oatmeal cookies, 2



Kcal: 1710	Kcal: 1120
Carb: 108 g 25%	Carb: 150 g 52%
Pro: 83 g 19%	Pro: 55 g 20%
Fat: 74 g 39%	Fat: 38 g 29%