

# NUTRITION FOR SPORTS

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# TRAINING DIET

- Fuel & nutrients needs during high energy expenditure
- Promote recovery
- Maintain appropriate fat to lean mass ratio
- Long term eating habits
- Practice eating strategies during competitions



# ENERGY REQUIREMENTS

- Age
- Gender
- Size
- Growth
- Activity
- Basal metabolic rate (BMR)  
Energy used by body at rest



# ENERGY INTAKE

- Energy expenditure  
Type and intensity of activities (3 to 13 times BMR)
- Weight maintenance
- Growth
- Muscle development
  
- 55-60% carbohydrates
- <30% fats
- 12-15% protein



# CARBOHYDRATES

- Most readily available fuel source used by muscles
- Both anaerobic and aerobic
- Lack of carbohydrates → inadequate glycogen stores, blood glucose levels → early fatigue, loss of concentration, poor recovery, headache, nausea



# CARBOHYDRATES

- Frequent small meals throughout the day
- Small amount of simple sugars (<5-10% of intake)  
Jam, cordials, juices, sports drink  
Chocolates not recommended due to high sugar and fats
- Carbohydrate snacks within 30 minutes of activity  
for glycogen replacement



# CARBOHYDRATES

**Table 8.4: 50g serves of carbohydrate**

Food	Quantity	Food	Quantity
<i>Bread and cereals</i>			
Bread	4 slices	Crumpet	2 average
Pocket bread	2 average	Pasta (cooked)	1.5 cups
Cooked rice	1.5 cups	Untoasted muesli	1 cup
Weet-Bix/Vitabrits	4 biscuits	All Bran	1 cup
Flakes with fruit	1.5 cups	Sustain	1 cup
Oats (cooked)	2.25 cups	Oats (raw)	0.75 cup
Fruit muffin	1.5 average	Breakfast bar	2 bars
Crispbread	8 large	Scone	2-3 average
Pikelets	4 average	Pancake	2 large
Muesli bar	2.5 bars		
<i>Dairy products</i>			
Fruit yoghurt	2 tubs (400g)	Yoghurt (plain)	3 tubs (600g)
Milk (all types)	1 litre	Skim milk powder	5 tbsp
<i>Starchy vegetables</i>			
Corn	2 cups	Potato (cooked)	2 large
Lentils/kidney beans	1.5 cups	Baked beans	1.5 cups



# CARBOHYDRATES

## *Fruit*

Bananas	2 large	Apricots	10 medium
Apples/oranges/pears	3 average	Grapes	2 medium bunches
Peaches	6 medium	Strawberries	3.5 cups
Melon	3.5 cups	Mango	1 large
Dates	9	Apricots	10 whole or 20 halves
Sultanas	6 tbsp	Fruit salad	2 cups
Tinned fruit	2 cups	Fruit snack pack	3

## *Miscellaneous products*

Honey/golden syrup/jam	2 tbsp	Sports bar (e.g. Power Bar)	1 average
Fruit Roll-up	4	Sugar	2 tbsp



# CARBOHYDRATES

## *Beverages and liquid supplements*

Softdrink/cordial	500 ml	Fruit juice	600 ml
Glucose powder/Glucodin	2.5 tbsp	Sustagen	4 tbsp
Polycose/Maximum	2.5 tbsp	Sustagen with milk	2 tbsp + 300 ml milk
Ensure Plus	1 can	Sustagen tetrapak	1.5 packs
Sports drinks (e.g. Isosport, Gatorade, Exceed)	750–800 ml	Meal replacement fluid (e.g. Exceed sports nutrition supplement, GatorPro)	1 can/tetrapak
Ensure Powder (lactose free)	80g		



# GLYCAEMIC INDEX (GI)

- Rate of glucose uptake from digestive system
- Low GI before exercise
- High GI after exercise for quick recovery



# GLYCAEMIC INDEX (GI)

**Table 8.5: High and low glycaemic index foods**

<b>High</b>	<b>Low</b>
Rice Bubbles, Cornflakes	Porridge, Sultana Bran
Puffed Wheat, Weet-Bix	Long grain white rice
Wholemeal and white bread	Instant noodles, pasta
Puffed crispbread, water crackers	Fruit loaf, mixed grain bread
Calrose and Sunbrown quick rice	Lentils, kidney beans, baked beans
Glucose, honey	Apple, apricot, grapes, peach, orange
Lucozade, jelly beans	Milk, yoghurt
Banana, watermelon	Fructose (fruit sugar)

*Source: Adapted from 'Glycaemic Index—an update and overview', in Nutrition Issues and Abstracts, No. 6, June 1995.*



# PROTEIN

- Growth, maintenance & repair of body tissue
- Energy production when glycogen is depleted  
Fatigue, unable to build & maintain muscle mass, slow recovery from injury
- Spread out protein intake as excess protein will be converted to fats



# PROTEIN

- Meat, poultry, fish, seafood, eggs, dairy products
- Bread, cereals, rice, pasta, legumes



# FATS

- Energy source during low intensity exercise
- Always enough fats in body
- No evidence that 'fat loading' improves performance
- Increase in body mass will lead to reduction of muscle glycogen levels → early fatigue



# VITAMINS

## Vitamin C

- Stress control, resistance to infection

## Vitamin B-complex

- Energy metabolism for muscular work

Sufficient with balanced diet of vegetables and fruits, wholegrain bread, cereals, lean meat.

No additional supplements required.



# IRON

- Oxygen transport in blood
- Lack of iron can lead to fatigue, breathlessness, cramps, reduced resistance to infection
- Red meat, poultry, fish, seafood
- Eggs, wholegrain, cereals
- Dark green vegetables



# CALCIUM

- Growth and strength of skeletal system
- Muscle contraction
- Dairy products (low fat), soy milk



# COMPETITION

- Maximize fuel (glycogen) and fluid stores
- Carbohydrate loading
- Useful for team players with weekly competition
- 3 or more days before competition
- 10g for every 1kg body weight daily



# TRAINING WEEK

- Maintain high carbohydrate intake throughout
- Cope with daily training demands
- Preparation for weekly game



# PRE-MATCH

- Glycogen stores should be at capacity
- Pre-event meal consist easily digestible carbohydrates
- Larger, more substantial meal 3-4 hrs before match
- Smaller snack 2 hrs before match
- Consume familiar foods, adequate fluids
- Avoid high sugar food → 'sugar high'
- High energetic response → rapid loss of sugar  
Impair endurance performance



**Table 8.9: A sample intake for a 70kg athlete carbohydrate loading prior to an event. The target is to consume 10g of carbohydrate per kilogram of body weight per day (i.e. 700 grams of carbohydrate per day).**

<i>Breakfast</i>	<ul style="list-style-type: none"> <li>1 glass of fruit juice</li> <li>6 Weet-Bix/Vitabrits or 2 cups of breakfast cereal</li> <li>1 cup of reduced fat or low fat milk</li> <li>2 slices of toast (unbuttered) with jam/honey</li> <li>1 medium banana</li> </ul>
<i>Morning snack</i>	2 crumpets (unbuttered) with jam/honey
<i>Lunch</i>	<ul style="list-style-type: none"> <li>750 ml of sports drink (e.g. Isosport, Gatorade)</li> <li>2 large bread rolls or 6 slices of bread (unbuttered) with salad</li> <li>1 piece of fruit</li> <li>1 glass of cordial</li> </ul>
<i>Afternoon snack</i>	<ul style="list-style-type: none"> <li>200 grams of low fat fruit yoghurt</li> <li>1 fruit muffin or sandwich (unbuttered) with jam/honey/Vegemite</li> </ul>
<i>Evening meal</i>	<ul style="list-style-type: none"> <li>2 cups of cooked rice (with lean beef and vegetable stir-fry)</li> <li>2 slices of bread</li> </ul>
<i>Supper</i>	<ul style="list-style-type: none"> <li>1 cup of fruit salad and 200g tub of low fat fruit yoghurt</li> <li>2 slices of raisin toast with jam or honey (unbuttered)</li> <li>1 glass of reduced fat or low fat milk.</li> </ul>

Total energy intake 15700 kJ, providing 705g carbohydrate (i.e. 75% of energy intake as carbohydrate).



# DURING MATCH

- Fluid retention
- Replenish water loss, oxygen transport
- Promote recovery
- Prevent cramps
- Caffeine → dehydration



# POST-MATCH

- Fluid replacement = body weight loss
- 1g carbohydrate for every 1 kg body weight
- First 30 minutes after exercise
- Every 2 hrs until daily intake is reached
- High GI
- Sports drinks, non-caffeinated soft drinks, fruits
- Nutritious carbohydrate foods
- Slightly larger serves of protein to aid recovery of muscle tissues (soft tissue injury)

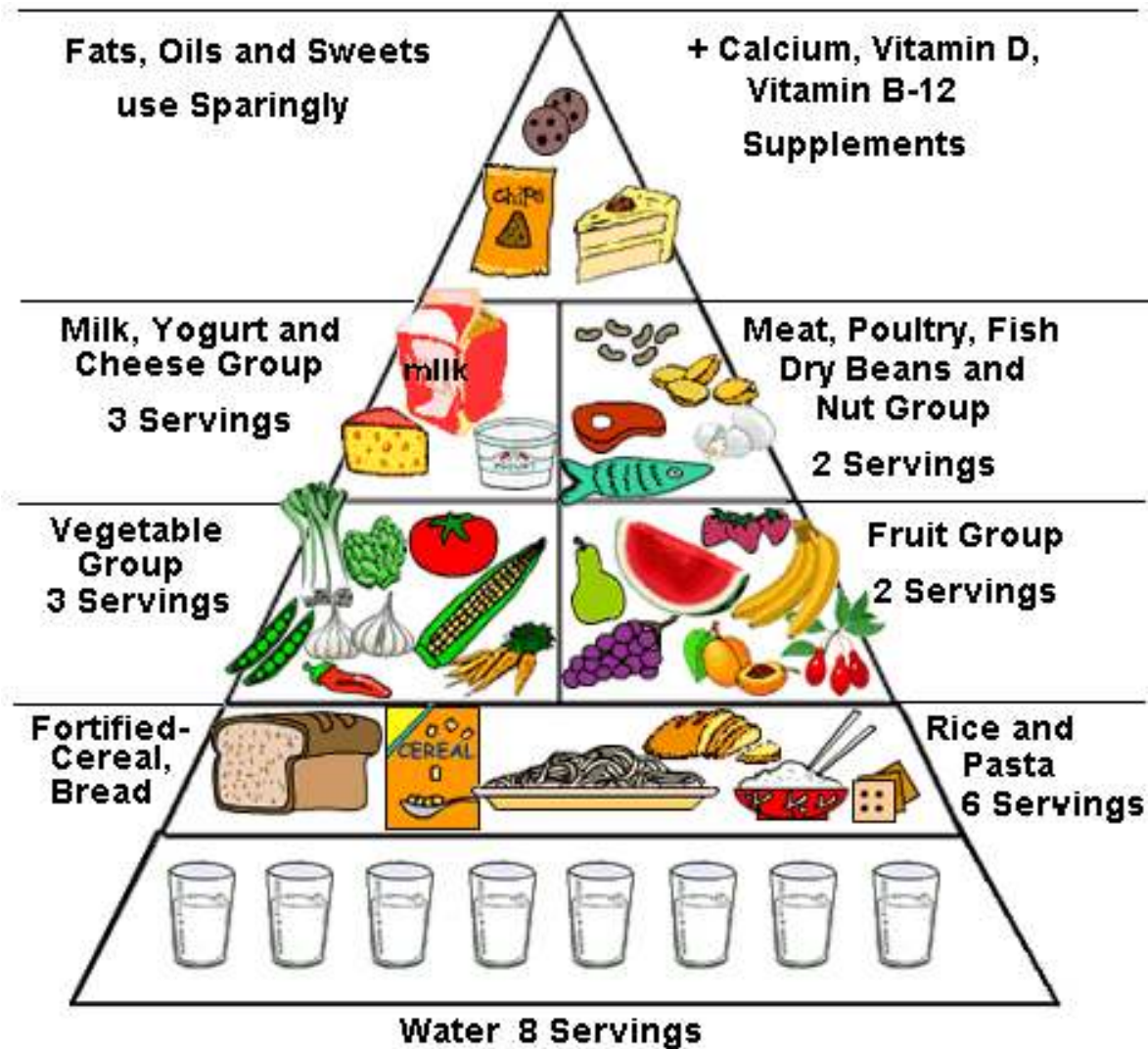


# POST-MATCH

**Table 8.10: Examples of 50 gram carbohydrate drinks and snacks**

750 ml sports drink (e.g. Isosport, Gatorade, Exceed Fluid and Energy Replacement, Powerade, Sport Plus)
750 ml cordial
500ml juice or non-cola soft drink
250–400ml Sustagen, Ensure, Exceed Sport Meal or reduced fat milkshake/smoothie
1 serve of Gatorpro or Exceed Sport Meal Plus
200–250ml 'carbo-loader' drink (e.g. Gatorlode or Exceed High Carbohydrate Source)
50 grams jelly beans or other jelly lollies
1 round of thick jam/honey/banana sandwiches
3 pieces of fruit
2–3 muesli bars
1 sports bar (e.g., Power Bar, Exceed Sports Bar)
Bowl of cereal with reduced fat milk and banana
Bowl of fruit salad and 200g tub of fruit yoghurt
2 large pancakes with lots of syrup
Bowl of pasta/rice with low fat toppings





All your dietary needs can be easily met  
by having a balanced diet!





Not fast food!



Eat your vegetables and fruits!



Drink low-fat milk!





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Goal by Beckham.  
Body by milk.

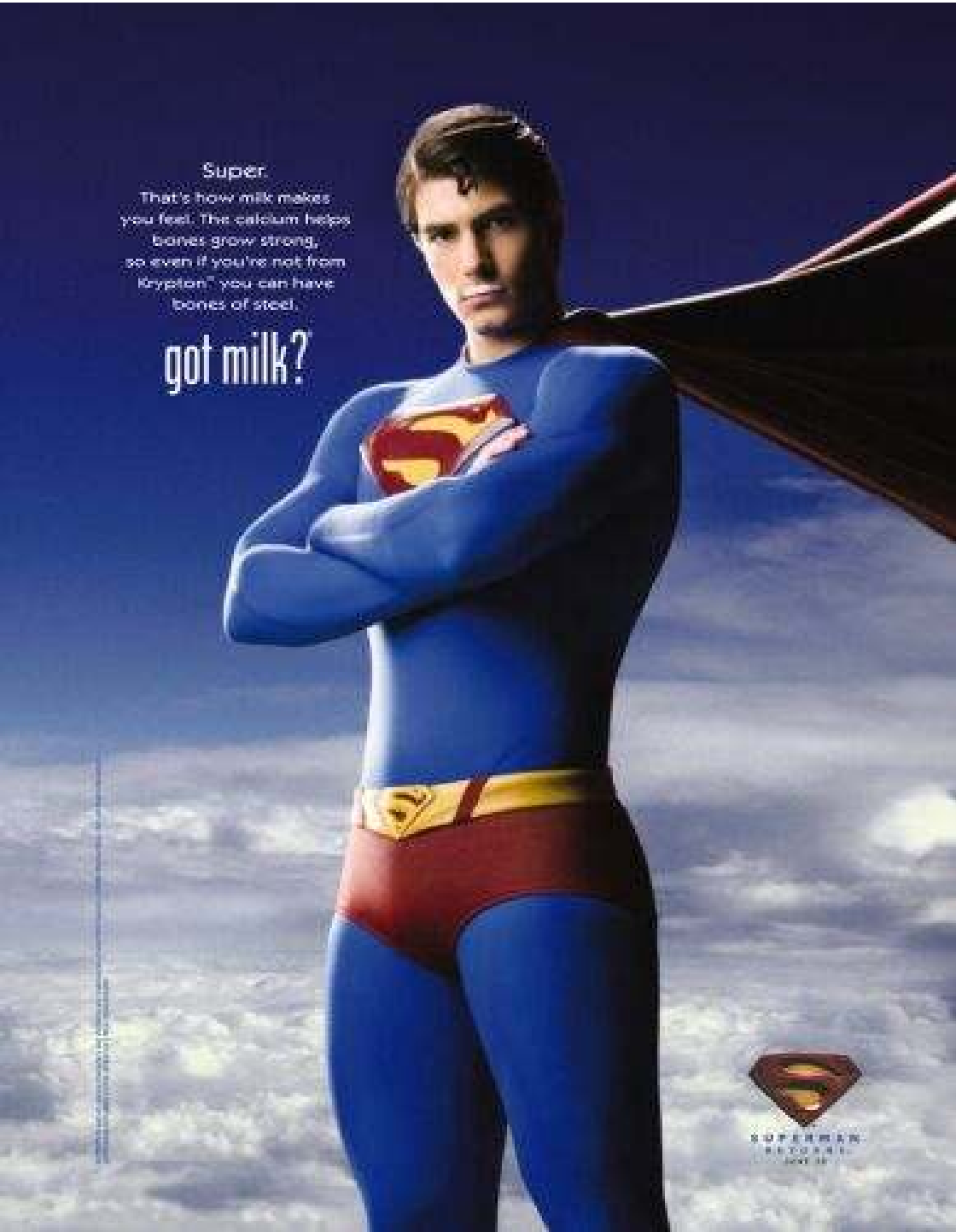
Heads up. The protein in milk helps build muscle and some studies suggest teens who choose it tend to be leaner. Staying active, eating right, and drinking 3 glasses a day of lowfat or fat free milk helps you look great. So grab a glass and get in the game.

got milk?

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That's how milk makes  
you feel. The calcium helps  
bones grow strong,  
so even if you're not from  
Krypton™ you can have  
bones of steel.

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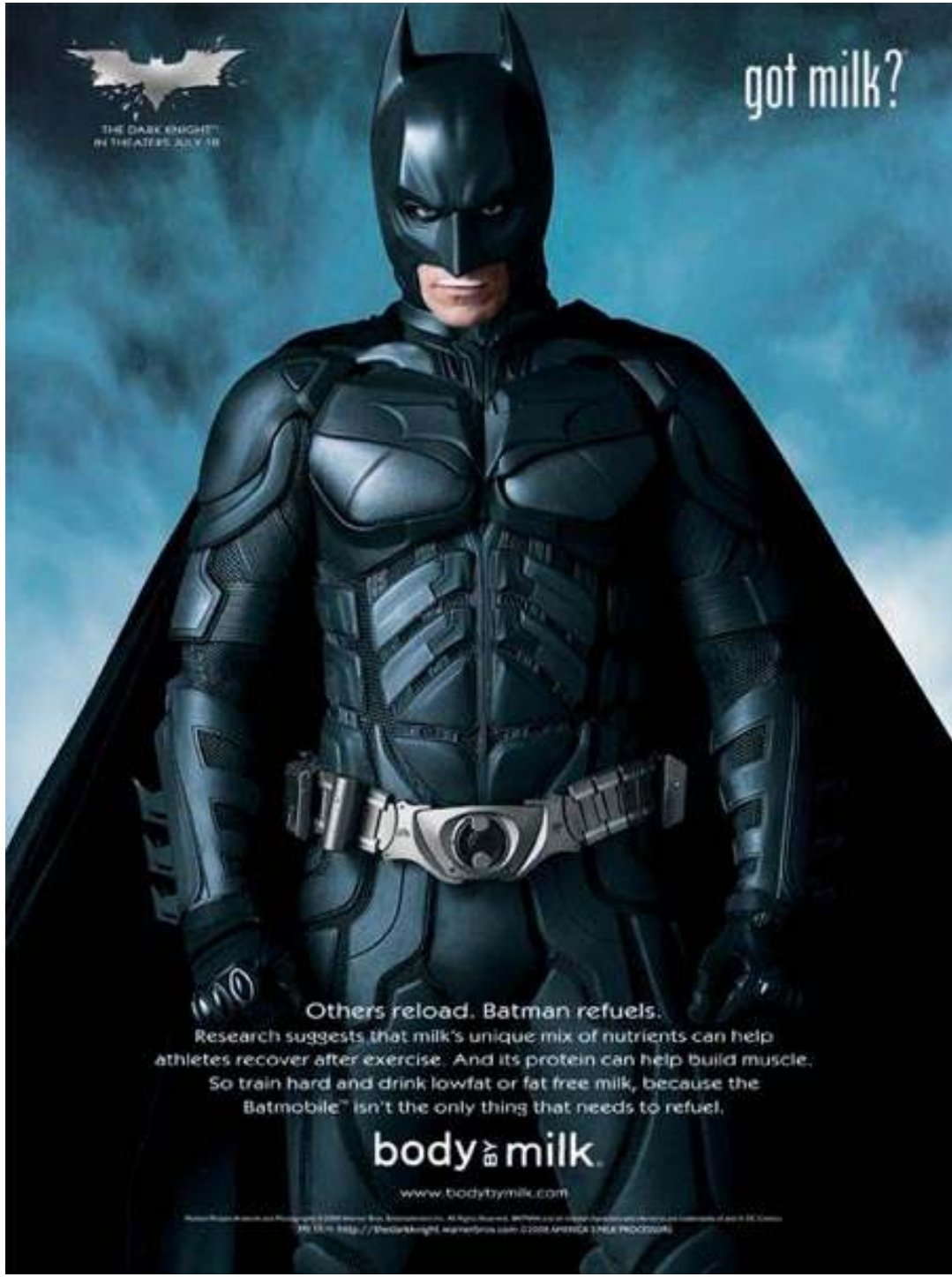
SUPERMAN  
RETURNS  
JUNE 20





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IN THEATERS JULY 18

got milk?



Others reload. Batman refuels.

Research suggests that milk's unique mix of nutrients can help athletes recover after exercise. And its protein can help build muscle. So train hard and drink lowfat or fat free milk, because the Batmobile™ isn't the only thing that needs to refuel.

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[www.bodybymilk.com](http://www.bodybymilk.com)

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WOLVERINE  
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body  milk

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got milk?



**Fantastic Pour.**

Want to look super? Some studies suggest that teens who choose milk instead of sugary drinks tend to be leaner and the protein in milk helps build muscle. Staying active, eating right and drinking 3 glasses a day of lowfat or fat free milk helps you look your best. That's no stretch.

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bodybymilk.com



Smash hit by Hayden. Body by milk.

You don't have to be a hero to feel invincible. That's why I drink milk. The protein helps build muscle and some studies suggest teens who choose it tend to be leaner. Cheers to that.

got milk?

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got milk?

Swift pick.

In this business, you've got to be decisive. So I choose milk. Some studies suggest that teens who choose milk instead of sugary drinks tend to be leaner, and the protein helps build muscle. So eat right, exercise and drink 3 glasses of lowfat or fat free milk a day. Music to my ears.

body by milk.

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