



# اولین دوره بین المللی فیتنس در ایران

۱۶ لغایت ۲۰ فروردین  
6-10 APRIL



# Sport Supplements

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Instagram: DrKowsari



# Nutritional Supplements



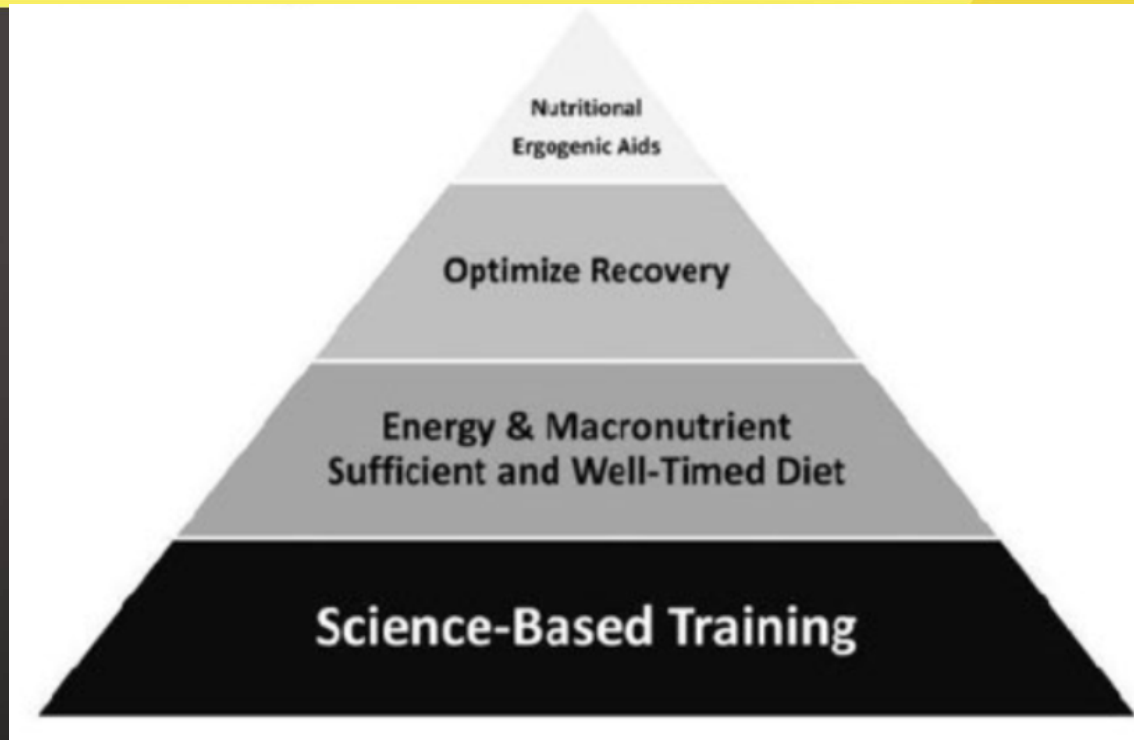
- 1. Health, beauty, and antiaging
- 2. Body composition (weight and fat loss, muscle gain)
- 3. Exercise performance

# *Cycling Of Supplements*



- body adapts to certain supplements
- need for certain supplements only at certain phases of training
- Stage One: Detraining or Rest Phase
- Stage Two: Beginning Training Phase
- Stage Three: Precompetition and Competition Phase

# performance enhancement pyramid







# Evidence To Support Efficacy & Safety



## Strong Evidence

- Creatine
- Protein
- EAA

## Limited Or Mixed Evidence

- BCAAs
- HMB

## Little Or No Evidence

- Arginine
- Glutamine
- Prohormones
- Test Boosters



# ○ Muscle Building Supplements

Creatine monohydrate

protein

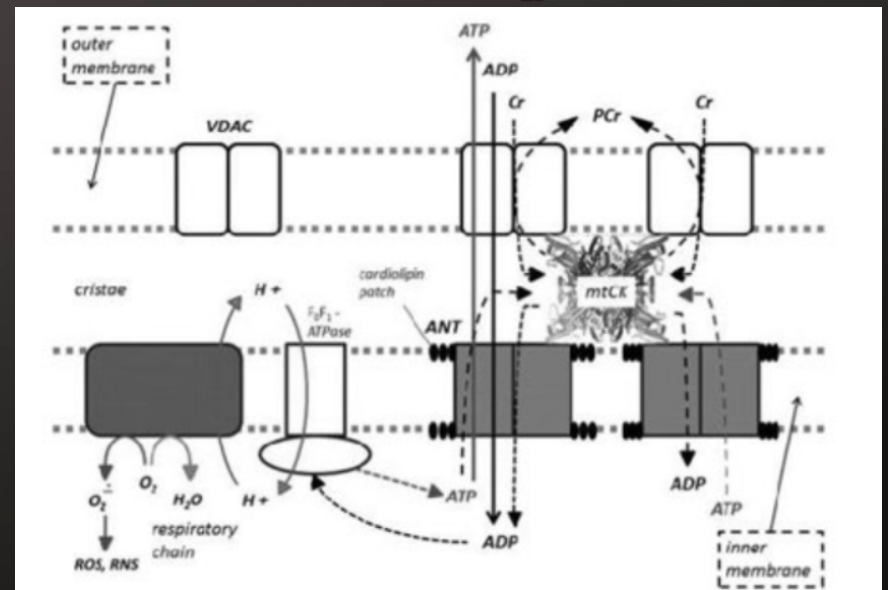
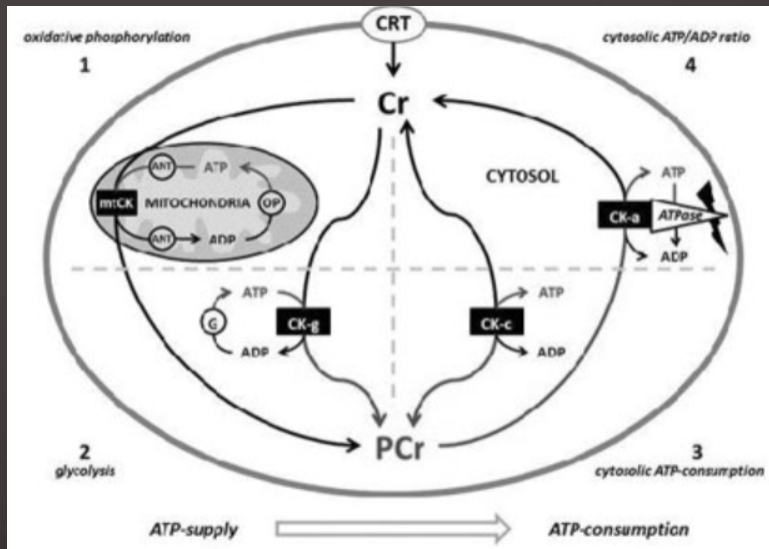
EAA





# Creatine Monohydrate:

## Dietary Availability And Synthesis

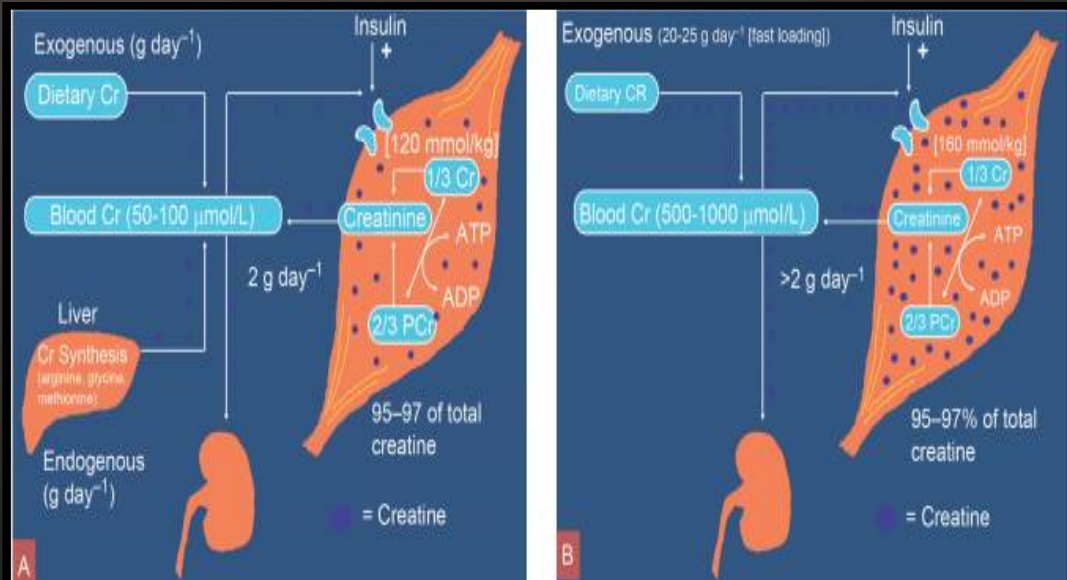


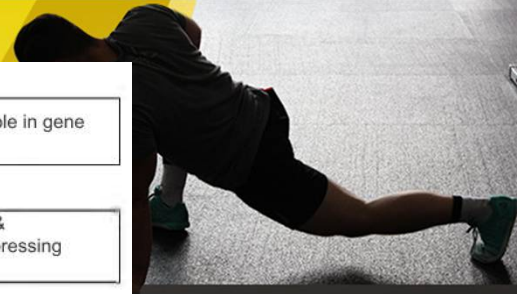
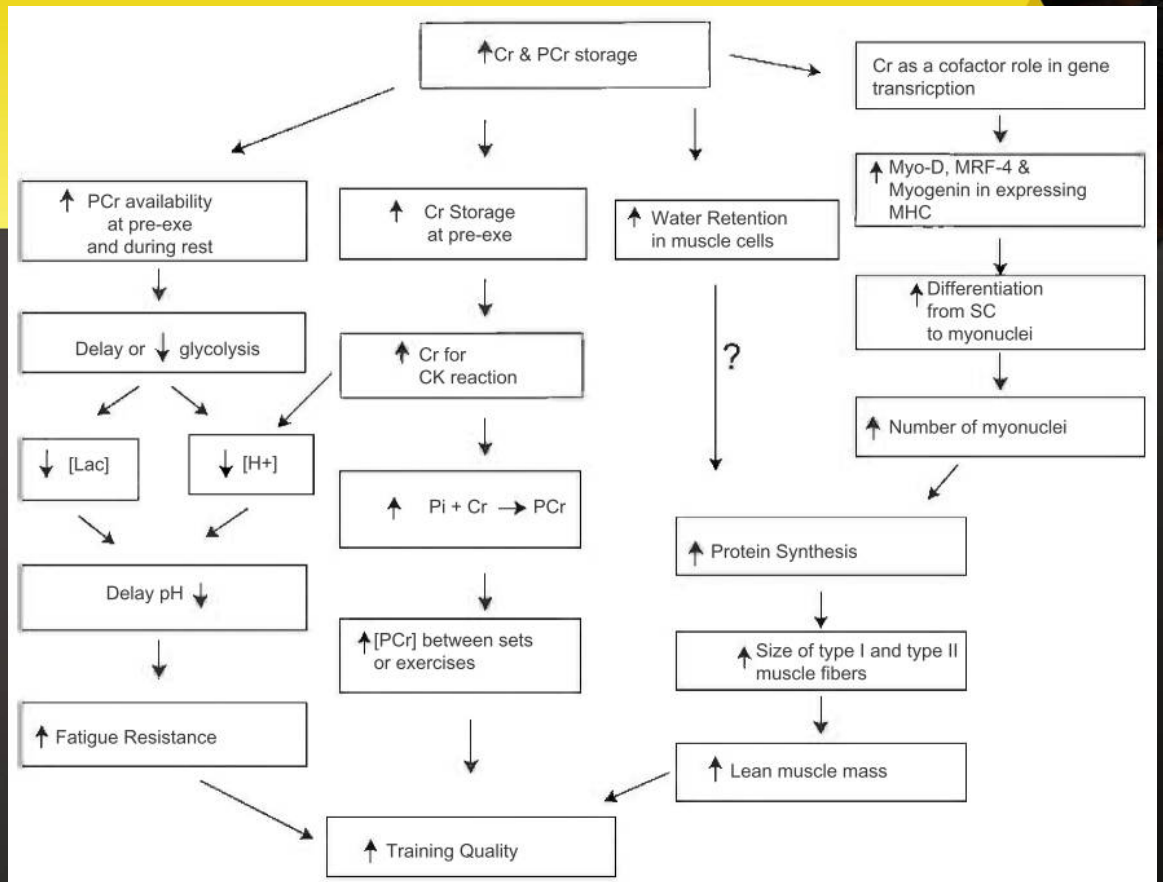
Typical creatine  
"Loading" dose

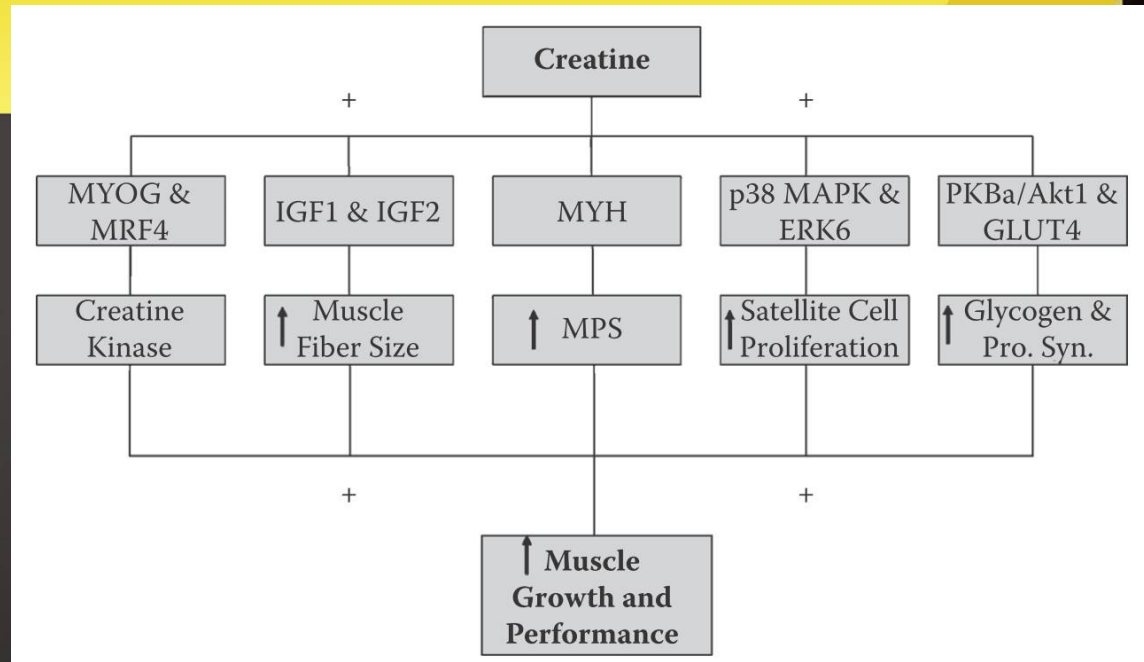
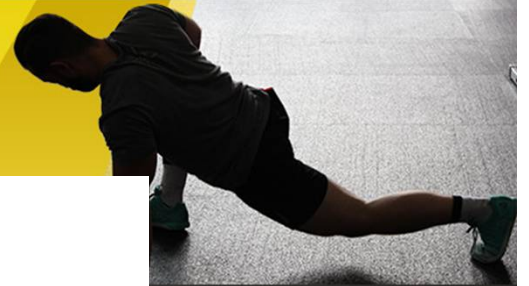
25 g day<sup>-1</sup>

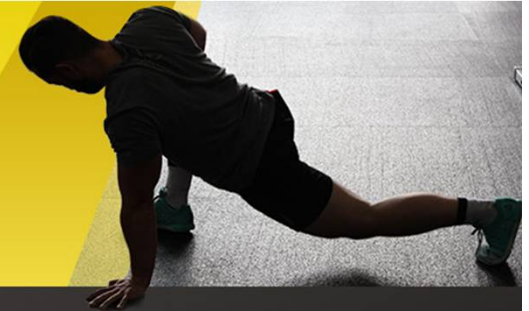
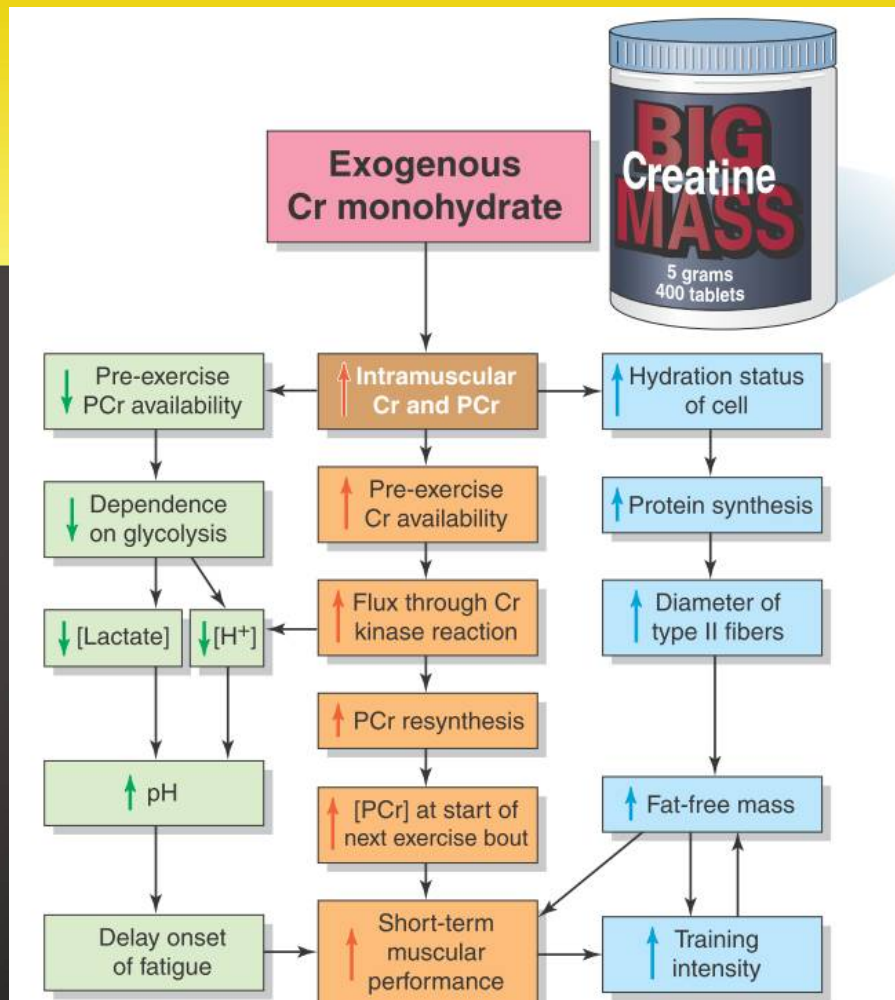


Food (1 g)	Cr Content (g)
Beef	0.0045
Pork	0.005
Cod	0.003
Herring	0.0065 to 0.01
Salmon	0.0045
Shrimp	trace
Tuna	0.004
Milk	0.0001
Cranberries	0.00002

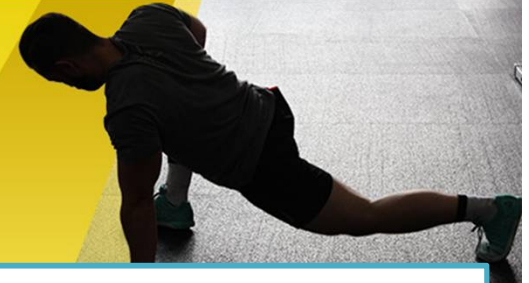




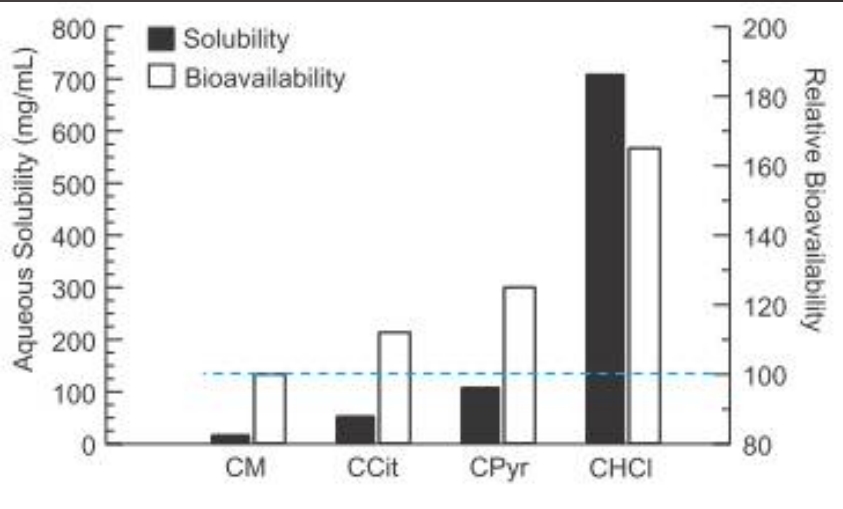




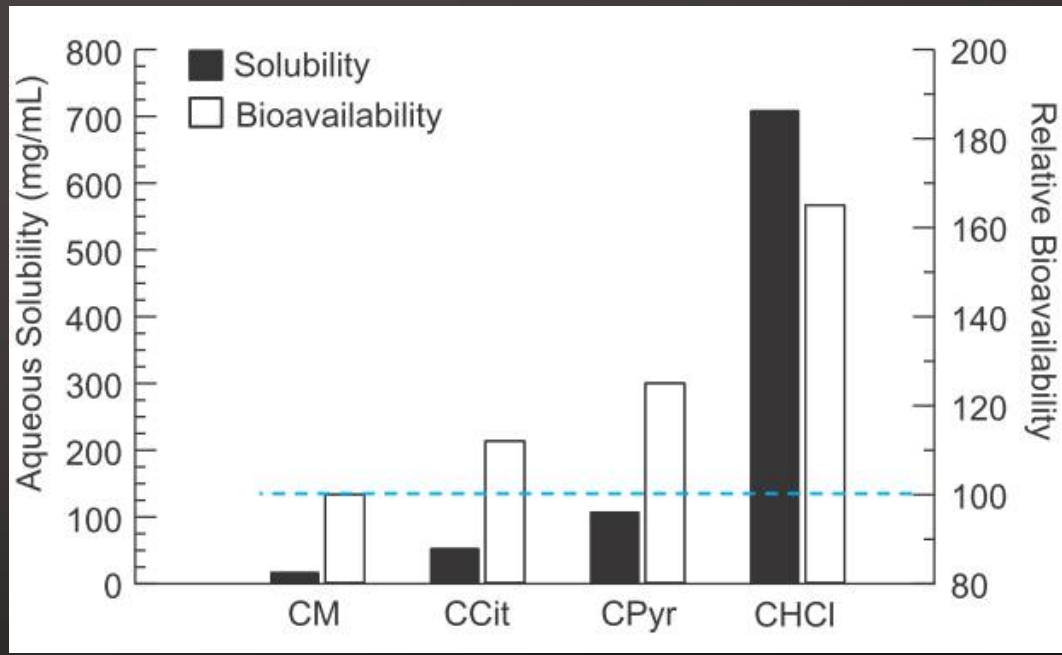
# Types



Property	CEE HCl	CRT Monohydrate
Molecular weight g/mol	195.6	149.7
Percent by weight creatine	67	88
Aqueous solubility 25°C mg/mL	396	14.5
Ratio of solubility (relative to monohydrate)	27.4	1.00
Octanol–water partition coefficient	0.205	0.102
Ratio of Partition coefficient (relative to monohydrate)	2.01	1.00



- کراتین منوهیدرات (creatine monohydrate)
- کراتین آنیدروز (creatine anhydrous)
- کراتین مالآت (di- and tri-creatine malate)
- کراتین اروآت (creatine orotate)
- کراتین آلکالین (creatine kre-alkalyn)
- کراتین سترات (creatine citrate)
- کراتین فسفات (creatine phosphate)
- کراتین سرم (creatine serum)
- کراتین تارتاریک (creatine tartrate)
- کراتین تیتراٹ (creatine titrate)
- منیزیم کراتین کی لیت (magnesium creatine chelate)
- کراتین گلوٹامین ٹائورین (creatine glutamine taurine)
- کراتین اچ ام بی (creatine HMB)
- کراتین ایتیل استر (creatine ethyl ester CEE)

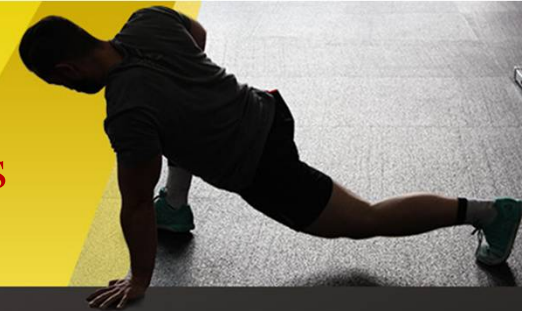






# Creatine Monohydrate:

## Effect On Muscle Mass

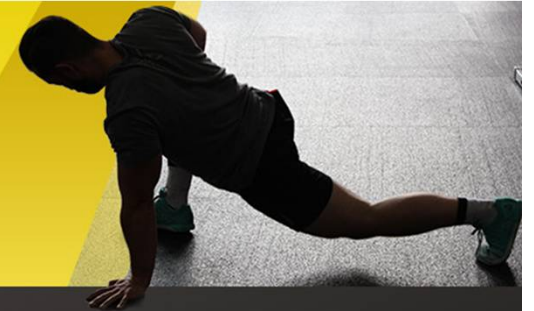


### Product A

- Feature 1
- Feature 2
- Feature 3

### Product B

- Feature 1
- Feature 2
- Feature 3



- ✓ Amount of steak equal 5 grams of creatine: 2.5 pounds
- ✓ Subjects who benefit the most : vegetarians
- ✓ Ingredients to enhance the uptake of creatine: high glycemic-index carbohydrates, whey protein, alpha lipoic acid (only one study though)
- ✓ Ingredients negate the effects : high-dose caffeine (2.3 mg/lb of body weight)
- ✓ Newly discovered mechanism: satellite cell proliferation, increased IGF-1 concentration in muscle, decreased serum myostatin concentration
- ✓ enhanced mental performance during sleep deprivation

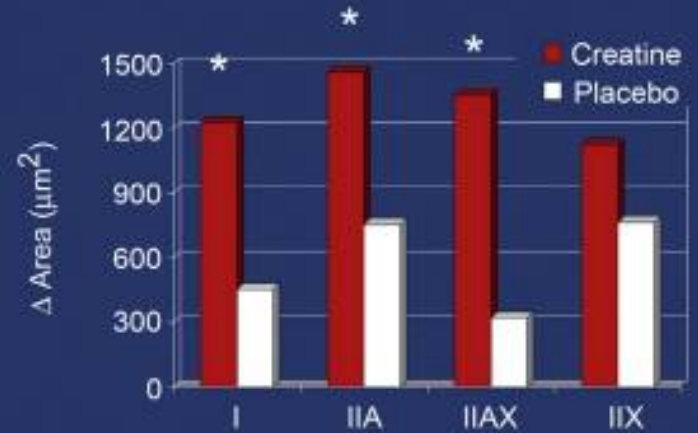
### Change in jump squat performance



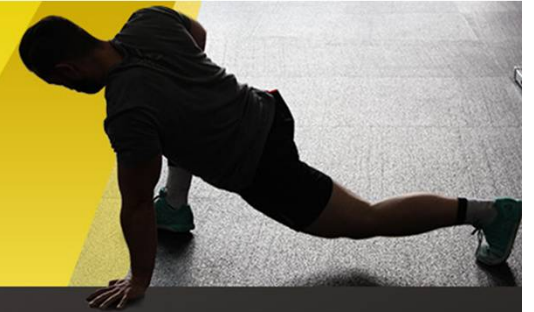
\* =  $P < 0.05$  increase from corresponding baseline value



### Muscle fiber cross-sectional area comparison with 12 weeks of resistance training



\* =  $P < 0.05$  increase from corresponding placebo delta changes  
 All delta increases in both groups significantly increased from pre-training values



مصرف کراتین به همراه بارگیری	مصرف کراتین بدون بارگیری	کراتین منوهیدرات
0.3 گرم به ازای هر کیلوگرم وزن بدن، 5 الی 7 روز		مرحله بارگیری
0.03 گرم به ازای هر کیلوگرم از وزن بدن، 3 الی 4 هفته	مصرف دوز 3 گرم روزانه، 4 هفته	مرحله حفظ
3 هفته		مرحله استراحت

# Protein:

## Effect On Muscle Mass



### Product A

- Feature 1
- Feature 2
- Feature 3

### Product B

- Feature 1
- Feature 2
- Feature 3

# Muscle Gain





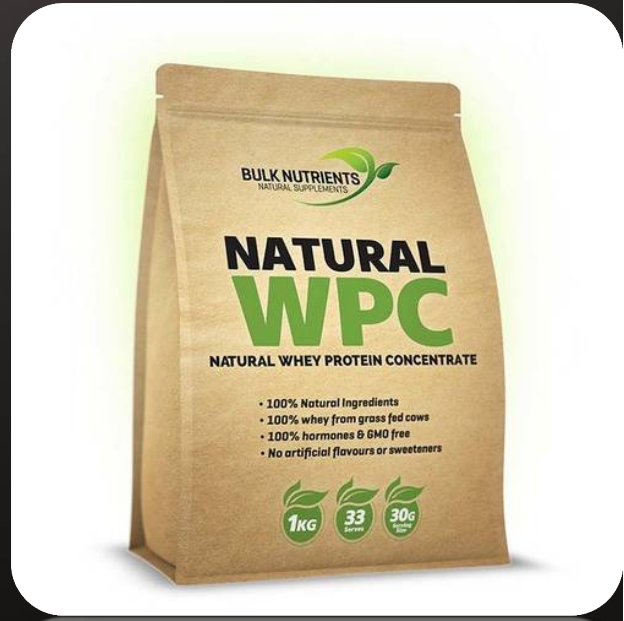
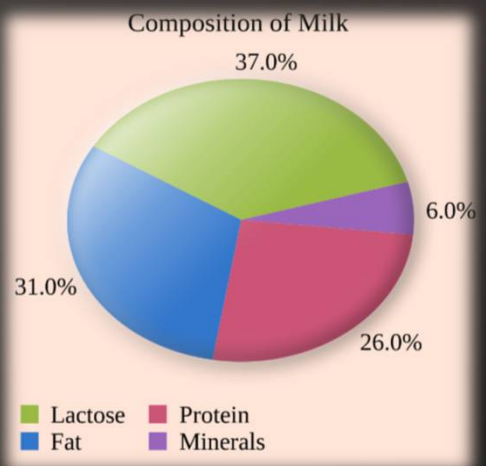
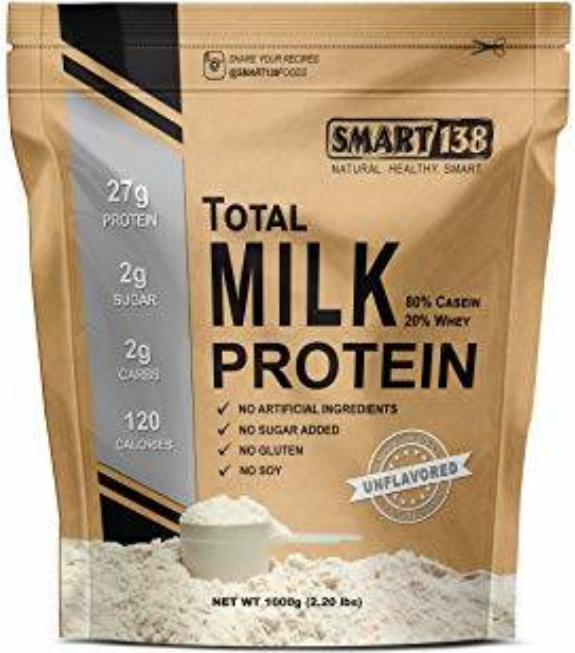


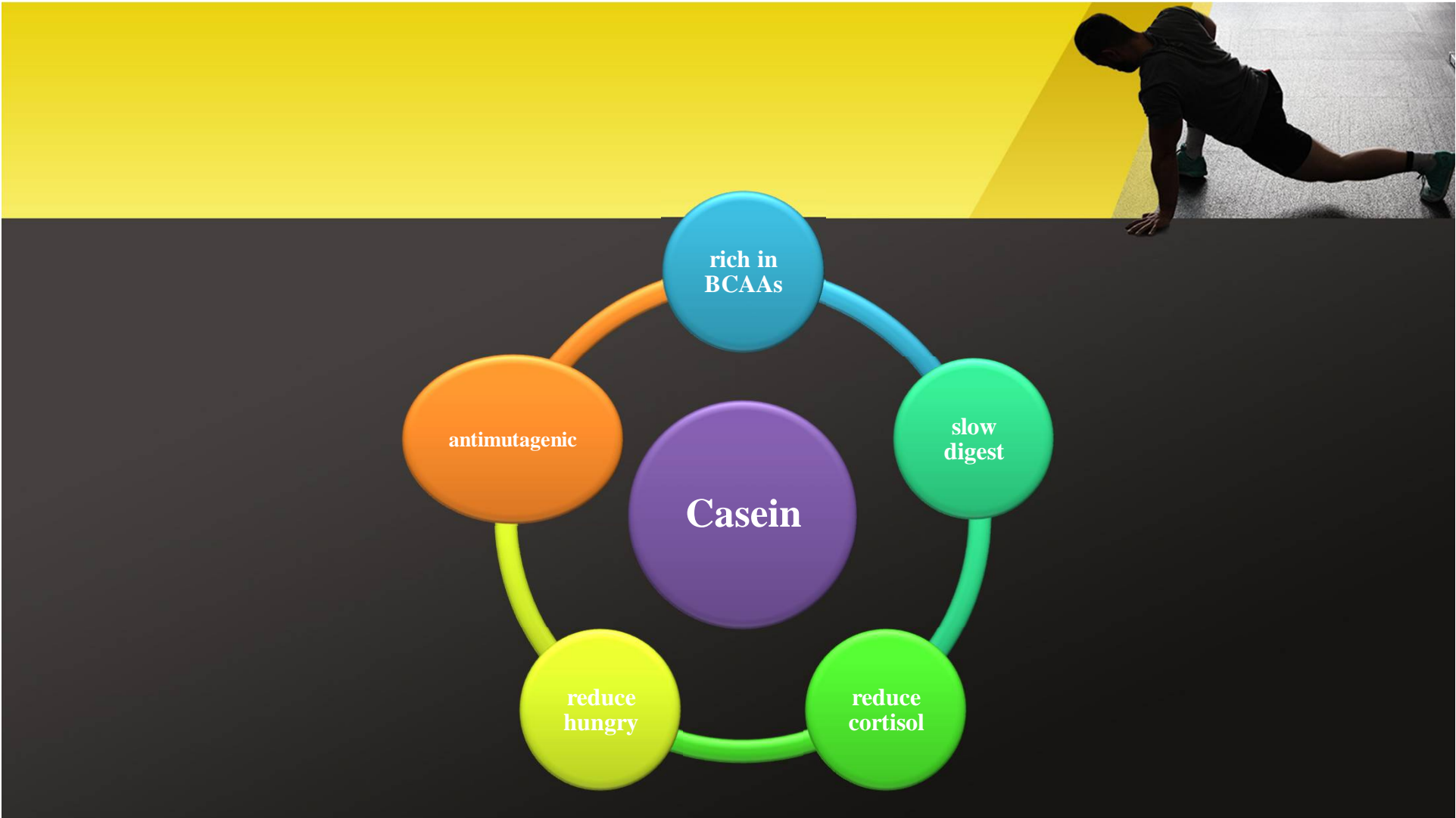
Nutrition Facts			
Milk, 3.7% fat ▾			
Amount Per 1 cup (244 g) ▾			
Calories 156			
			% Daily Value*
<b>Total Fat</b>	9 g		13%
	Saturated fat	6 g	30%
	Polyunsaturated fat	0.3 g	
	Monounsaturated fat	2.6 g	
<b>Cholesterol</b>	34.2 mg		11%
<b>Sodium</b>	119.6 mg		4%
<b>Potassium</b>	368.4 mg		10%
<b>Total Carbohydrate</b>	11 g		3%
	Dietary fiber	0 g	0%
<b>Protein</b>	8 g		16%
Vitamin A	6%	Vitamin C	6%
Calcium	29%	Iron	0%
Vitamin D	0%	Vitamin B-6	5%
Cobalamin	14%	Magnesium	7%



Milk, 1% fat ▾			
Amount Per 1 cup (244 g) ▾			
Calories 103			
			% Daily Value*
<b>Total Fat</b>	2.4 g		3%
	Saturated fat	1.5 g	7%
	Polyunsaturated fat	0.1 g	
	Monounsaturated fat	0.7 g	
<b>Cholesterol</b>	12.2 mg		4%
<b>Sodium</b>	107.4 mg		4%
<b>Potassium</b>	366 mg		10%
<b>Total Carbohydrate</b>	12 g		4%
	Dietary fiber	0 g	0%
	Sugar	13 g	
<b>Protein</b>	8 g		16%
Vitamin A	2%	Vitamin C	0%
Calcium	30%	Iron	0%
Vitamin D	0%	Vitamin B-6	5%
Cobalamin	18%	Magnesium	6%







rich in  
BCAAs

slow  
digest

Casein

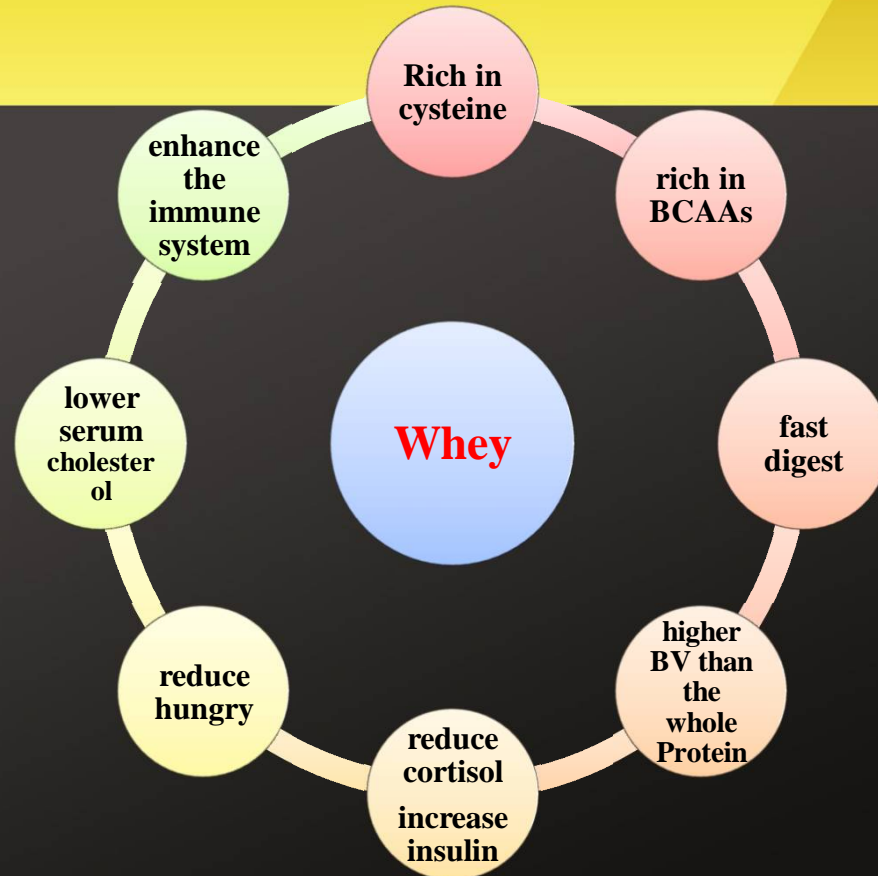
reduce  
cortisol

reduce  
hungry

antimutagenic



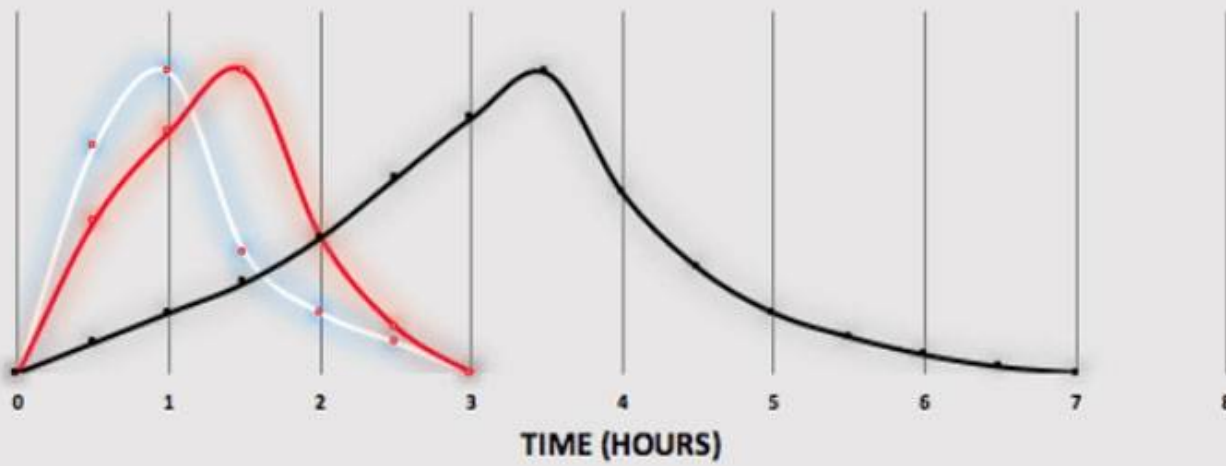
# WHEY



# ProSupps IsoP3

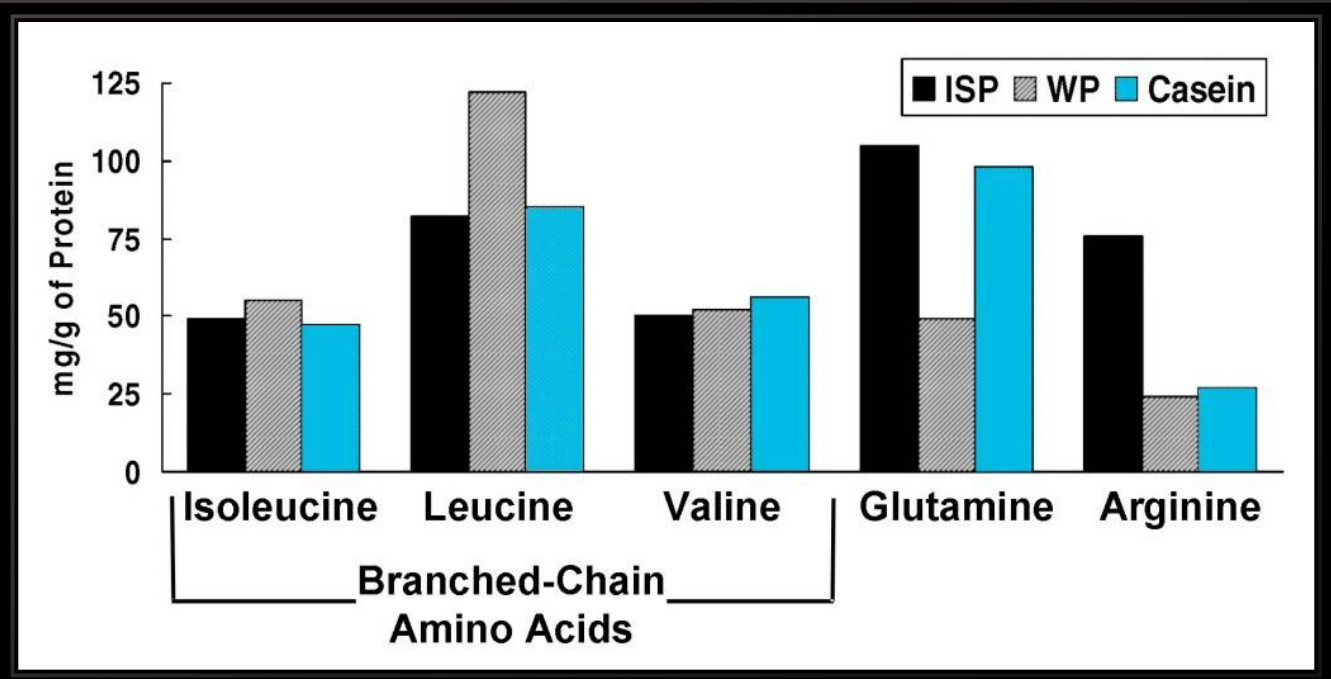
## Blood Amino Acid Levels

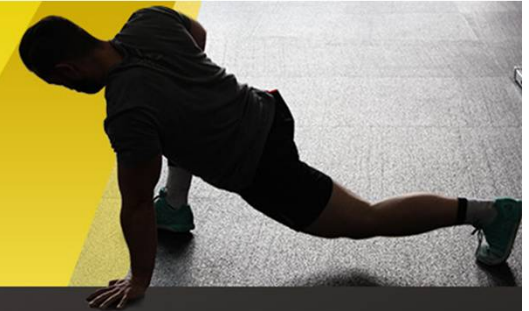
• Whey Protein Hydrolysate    • Whey Protein Isolate    — Milk Protein Isolate



# SOY Protein







## Types of Whey Protein

Whey Protein



Whey Protein  
Concentrate

Whey Protein Isolate

Whey Protein  
Hydrostate

It is first level of refined Whey Protein.  
It can be further classified into two types:  
(1) Higher End Whey Protein.  
(2) Lower End Whey Protein

It is Next level of refined Whey Protein.

1. It contains 90% of Pure Whey Protein.
2. Low Fat and lactolose

It is purest from of Whey Protein.

1. Easy to digest.
2. It contains more insulin (28 % more insulin as compare to WPC and WPI)

## Supplement Facts

Serving size: 1 scoop (28.74 grams)  
Servings per container: 79

Amount Per Serving	% Daily Value
Calories 110	
Cholesterol <5mg	<1%*
Total Carbohydrate <1g	<1%*
Protein 25g	50%*
Calcium 138mg	15%*
Phosphorus 63mg	6%*
Magnesium 22mg	6%*
Sodium 40mg	2%*
Potassium 150mg	4%*

**Whey Protein Isolate (non-denatured) 28.74g †**  
(28.74 grams WPI90 yielding 25 grams of complete protein)(CFM cross flow micro and ultra-filtered. Cold processed. Instantized with sunflower lecithin.)

\* Percent Daily Values are based on a 2000 calorie diet.  
† Daily Value not established.

**Other Ingredients: ABSOLUTELY NONE**

## SUPPLEMENT FACTS

Serving Size = 30 grams

	AMOUNT PER SERVING	% DAILY VALUE*
Calories	121	
Calories from fat	18	
<b>Total fat</b>	2g	2%
Saturated fat	2g	5%
<b>Total Carbohydrates</b>	2g	1%
Cholesterol	60mg	9%
Protein	24g	48%
Calcium	225mg	10%
Sodium	42mg	2%
Potassium	135mg	4%

\* % daily values are based on 2,000 calorie diet.

Ingredients: Whey concentrate\*\*

\*\*Contains: milk

This product may have been manufactured on the same processing line as products containing tree nuts (coconut), milk.

**RECOMMENDED DOSE:** As a dietary supplement, add to 6 to 8 oz of water or your favorite beverage. To avoid clumps do not add ice. Store in a cool, dry place. Do not refrigerate.

**CONSULT YOUR PHYSICIAN** if you are being treated for diabetes or if you are pregnant or nursing. For children, consult your pediatrician.

If you are lactose intolerant do not use this product.

### Typical Amino Acid Content From Whey

Alanine	1470
Arginine	630
Aspartic Acid	3240
Cysteine	690
Glutamic Acid	5010
Glycine	540
Histidine	660
Isoleucine	1740
Leucine	3240
Lysine	2880
Methionine	570
Phenylalanine	990
Proline	1740
Serine	1410
Threonine	2160
Tryptophan	630
Tyrosine	540
Valine	1740

values are milligrams amino acid per 30g of whey

## Nutritional Facts

Serving Size: 1 level scoop (30 grams)  
Servings Per Container: 76 (5lbs); 30 (2lbs)

Amount per serving

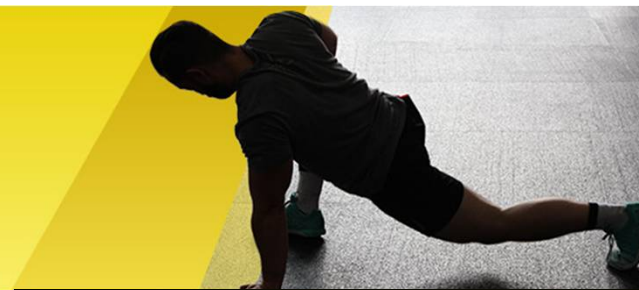
Calories 113	Calories from Fat 12
% Daily Value*	
<b>Total Fat 1.3g</b>	2%
Saturated Fat .7	
Trans Fat 0g	0%
Cholesterol 26mg	9%
<b>Total Carbohydrate 2.6g</b>	1%
Dietary Fiber 1g	
Sugars .8g	
Complex Starch .8g	
Sodium 34mg	1%
Potassium 160mg	5%
<b>Protein 22.5g</b>	47%

Vitamin A < 1%  
Calcium < 13%

Magnesium < 5%  
Phosphorous < 9%

\* Percent Daily Values are based on a 2000 calorie diet. Your daily values may be higher or lower depending on your caloric needs.

Ingredients: Whey Protein Isolate, Whey Protein Concentrate, Whey Peptides, Cocoa Powder, Natural Chocolate Flavoring, lecithin, and Stevia Reb A 97 **Allergens:** whey derived from milk and lecithin derived from non GMO soy







## Nutritional Facts

Serving Size: 1 level scoop (38 grams)  
 Servings Per Container: 59.7 (5lbs); 23.9 (2lbs)

Amount per serving

**Calories 145** **Calories from Fat 10**  
**% Daily Value\***

<b>Total Fat</b> 1g	2%
Saturated Fat .7g	3%
Trans Fat 0g	0%
<b>Cholesterol</b> 44mg	15%
<b>Total Carbohydrate</b> 3g	1%
Dietary Fiber 1g	
Sugars 1.3g	
Complex Starch 0g	
<b>Sodium</b> 46mg	2%
<b>Potassium</b> 304mg	9%
<b>Protein</b> 32g	64%

Vitamin A < 2% Magnesium < 5%  
 Calcium < 6% Phosphorous < 7%

\* Percent Daily Values are based on a 2000 calorie diet. Your daily values may be higher or lower depending on your caloric needs.

**Ingredients:** Hydrolyzed whey protein, Cocoa Powder, Sucrose, lecithin, Natural Flavors, and Stevia  
**Allergens:** Micellar Casein derived from Milk and lecithin derived from non GMO soy

## Nutrition Facts

Serving Size: 1 heaping scoop (41g)  
 Servings Per Container: About 57

Amount per Serving

**Calories 160** **Calories from fat 10**  
**%Daily Value\***

<b>Total Fat</b>	2g	<b>4%</b>
Saturated Fat	0g	<b>0%</b>
Trans Fat	0g	
<b>Cholesterol</b>	35mg	<b>14%</b>
<b>Sodium</b>	175mg	<b>7%</b>
<b>Potassium</b>	230mg	<b>7%</b>
<b>Total Carbohydrate</b>	2g	<b>1%</b>
Dietary Fiber	1g	<b>4%</b>
Sugars	0g	
<b>Protein</b>	34g	<b>68%</b>

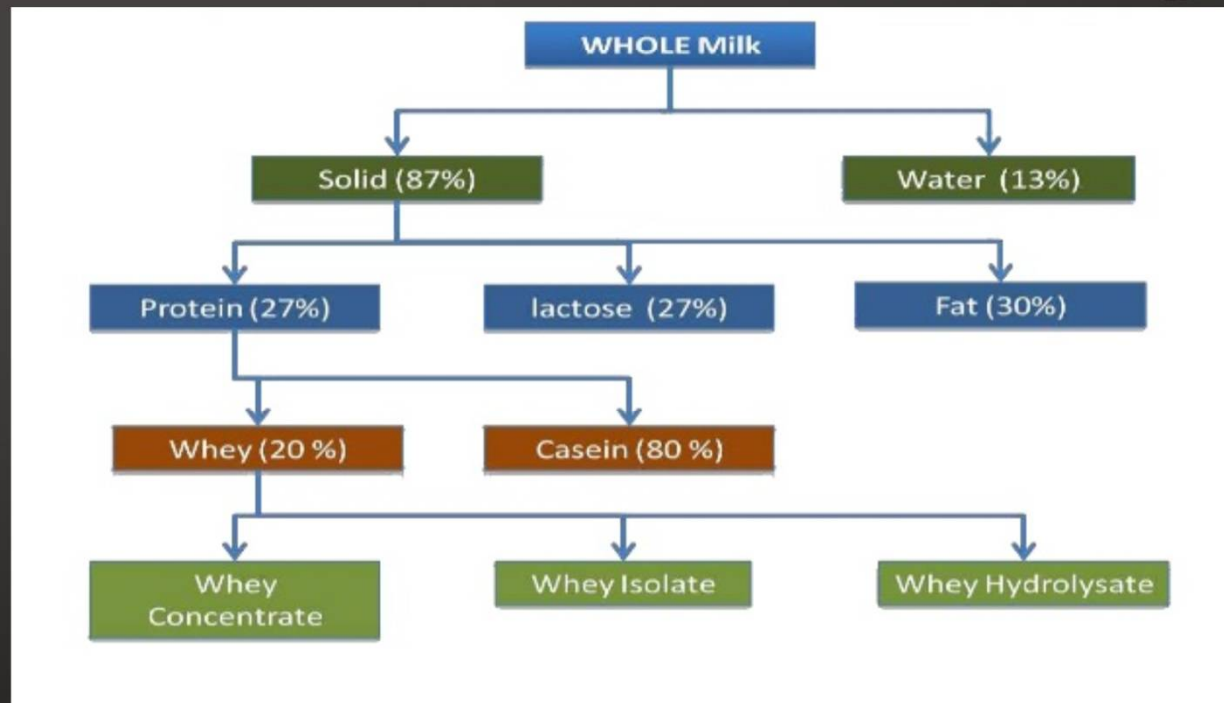
Vitamin A: 0% Vitamin C: 0%  
 Calcium: 19% Iron: 0%

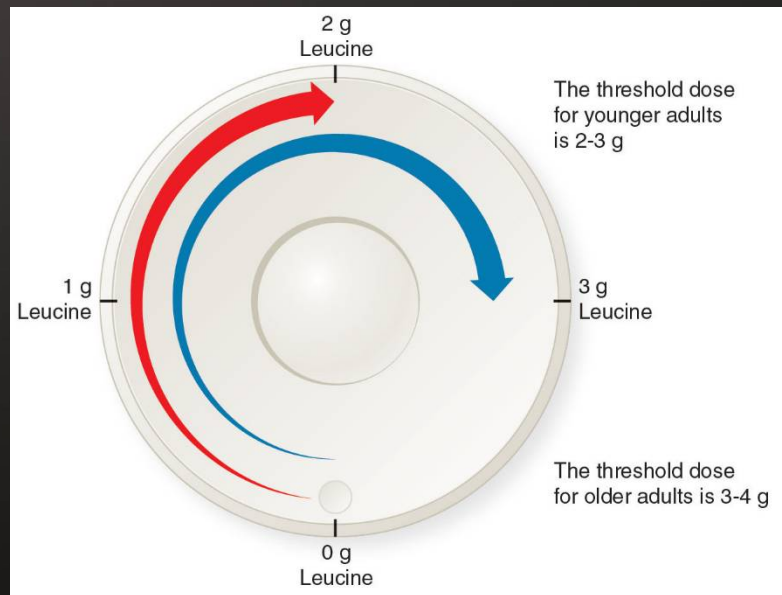
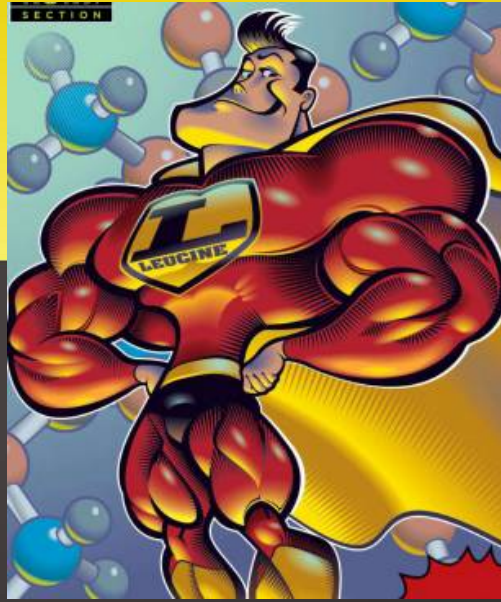
\*Percent Daily Values are based on a 2,000 calorie diet. Your daily values may be higher or lower depending on your caloric needs.

	Calories	2000	2500
<b>Total Fat</b>	less than	65g	80g
<b>Saturated Fat</b>	less than	20g	25g
<b>Cholesterol</b>	less than	300g	300g
<b>Sodium</b>	less than	2400g	2400g
<b>Total Carbohydrate</b>		300g	375g
Dietary Fiber		25g	30g

**Calories per gram:** Fat: 9 • Carbohydrate: 4 • Protein: 4

**Ingredients:** WPI Protein Complex (Cross-Flow Microfiltered Whey Protein Isolate, Hydrolyzed Whey Protein Isolate), WPC5 Protein Complex™ (Whey Protein Concentrate, Micellar Casein, Hydrolyzed Casein, Potassium Caseinate, Egg Albumin), Natural and Artificial Flavors. Contains less than 2% of the following: Lecithin, Aminogen,® N-Acetyl-L-Glutamine (NAG), Salt, Silicon Dioxide, Sucralose.

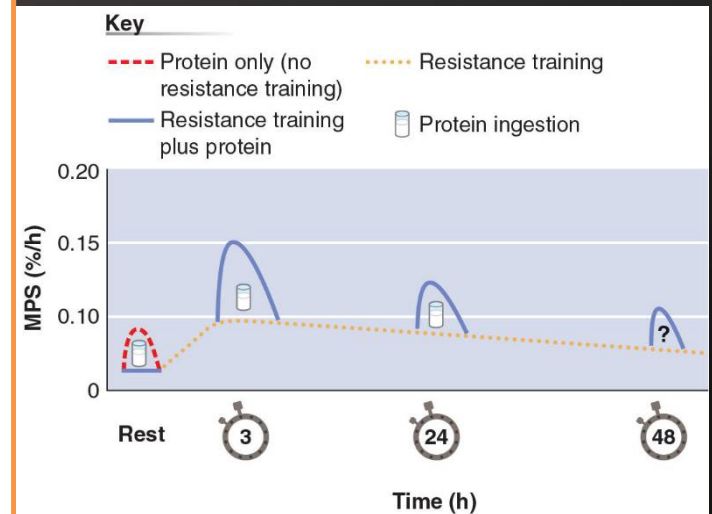


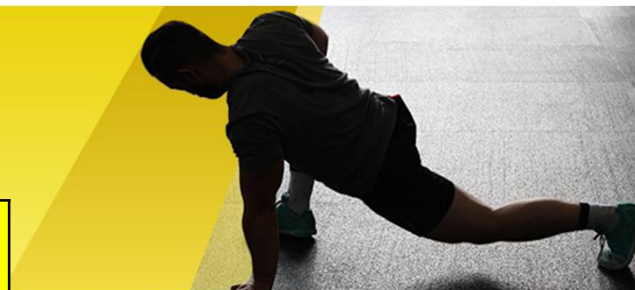


# Does Protein Timing Matter?

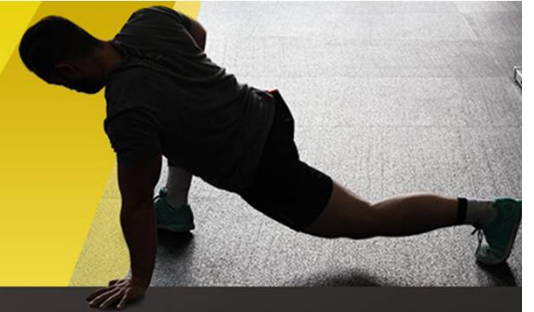


- After exercise, an individual is in a catabolic state until food is consumed
- The muscle protein synthesis response to amino acids postexercise decreases over time
- more important for individuals exercising in a fasting state or those not consuming enough protein per day





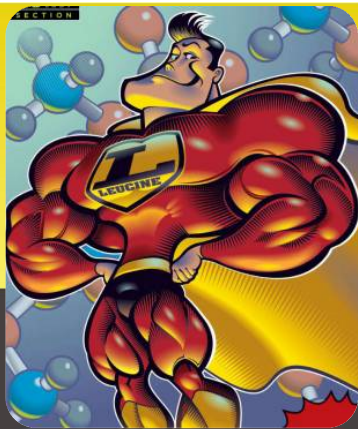
قبل خواب	میان وعده	بعد تمرین	قبل تمرین	آمینو اسیدهای ضروری	مکمل های پروتئین
***	*****	****	*****	*****	پروتئین وی ایزوله (WPI)
*	**	*****	*****	*****	پروتئین وی هیدرولیزه (WPH)
***	*****	****	***	*****	پروتئین وی کنسانتره (WPC)
*****	*****	*	*	*****	پروتئین کازئین میسلار
*	*****	*	***	***	پروتئین تخم مرغ (آلبومین)
*	**	*	*	**	پروتئین سویا



مرحله استراحت	زمان مصرف	دوز مصرف	وزن بدن
هر 8 الی 12 هفته، 3 هفته استراحت	ناشتا، 45 الی 60 دقیقه قبل تمرین، 20 دقیقه بعد تمرین، 4 ساعت بعد تمرین	1 الی 4 وعده در روز، 20 الی 30 گرم در هر وعده	زیر 80 کیلوگرم
هر 8 الی 12 هفته، 3 هفته استراحت	ناشتا، 45 الی 60 دقیقه قبل تمرین، 20 دقیقه بعد تمرین، 4 ساعت بعد تمرین	1 الی 4 وعده، 30 الی 40 گرم در هر وعده	بالای 80 کیلوگرم

# Safety of protein supplementation





## Essential Amino Acids:

<i>Essential</i>	<i>Nonessential</i>
Histidine <sup>a</sup>	Alanine
Isoleucine	Arginine
Leucine	Asparagine
Lysine	Aspartic acid
Methionine	Cysteine
Phenylalanine	Glutamic acid
Threonine	Glutamine
Tryptophan	Glycine
Valine	Proline

<sup>a</sup>Some adults may be able to synthesize histidine on their own

### Supplement Facts

Serving Size: 1 Scoop (12g)

Servings Per Container: 30

	Amount Per Serving	% Daily Value*
Calories	10	
Total Carbohydrate	3 g	1%*
Magnesium (as magnesium citrate, magnesium glycinate glutamine chelate)	17 mg	4%
Sodium (as pink himalayan salt)	39 mg	2%
Potassium (as potassium citrate, coconut water concentrate)	52 mg	1%
<b>Branch Chain Amino Acids:</b>		
L-Leucine	2500 mg	†
L-Isoleucine	1250 mg	†
L-Valine	1250 mg	†
<b>Essential Amino Acids:</b>		
L-Lysine Hydrochloride	300 mg	†
L-Threonine	225 mg	†
L-Phenylalanine	200 mg	†
L-Tryptophan	50 mg	†
L-Histidine	25 mg	†
L-Methionine	20 mg	†
<b>Muscular Energy &amp; Nutrient Delivery:</b>		
Highly Branched Cyclic Dextrin (Cluster Dextrin®)	2000 mg	†
D-Ribose	500 mg	†

\* Percent Daily Values are based on a 2000 calorie diet

† Daily Value Not Established

**Other ingredients:** Citric Acid, Natural Flavors, Sucralose, Silicon Dioxide, Fruit & Vegetable Juice Powder





## BCAAs



• لوسین 5 الی 10 % پروتئین ها

1

• افزایش سنتز پروتئین (افزایش سنتز پروتئین از  $45 \text{ mg/kg/h}$  تا  $260 \text{ mg/kg/h}$ )

2

• کاهش تجزیه پروتئین

3

• تنظیم متابولیسم گلوکز در کبد و سلول عضلات

4

• تجزیه چربی

5

• موثر در ساخت گلوتامین

6

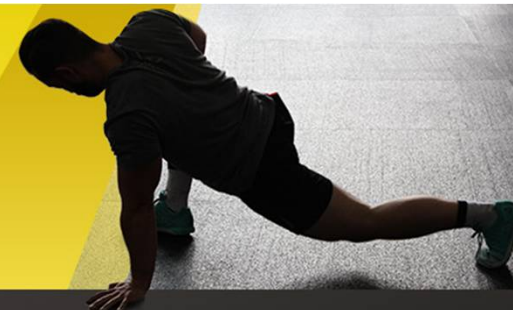
• تاخیر در خستگی مرکزی

7

• مصرف به عنوان سوخت

8

# بهترین دوز و روش مصرفی

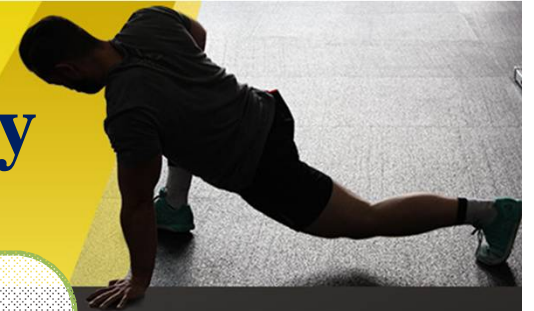


- 50 الی 100 میلی گرم به ازای هر کیلوگرم وزن بدن
- اثراتش تا 3 الی 4 ساعت پس از مصرف ماندگاراند.
- روز تمرین و استراحت: 4-6 گرم دو بار در روز
  - (1) ناشتا
  - (2) قبل تمرین
  - (3) بعد تمرین
  - (4) میان وعده 90 دقیقه پس از وعده غذایی اصلی یا تمرین

# Performance Enhancement Supplements



# Evidence To Support Efficacy & Safety



## Strong Evidence

- Creatine
- B-alanine
- Caffeine
- Carbohydrate
- Sodium Bicarbonate
- Sodium Phosphate

## Limited Or Mixed Evidence

- BCAAs
- Citrulline
- Glutamine
- HMB
- Nitrates
- Taurine

## Little Or No Evidence

- Arginine
- Carnitine
- Glutamine

# ○ Performance Enhancement Supplements



Creatine monohydrate

B-alanine

Caffeine

Carbohydrate

Sodium  
Bicarbonate

Sodium  
Phosphate





## B-alanine



### Product A

- Feature 1
- Feature 2
- Feature 3

### Product B

- Feature 1
- Feature 2
- Feature 3



- بتاآلانين چيست؟

- پيش ساز کارنوزين است. / تا 80% سطح کارنوزين را افزايش مي دهد.

- اثرش چيست؟

- Ph سلول ها را در سطح نرمال نگه مي دارد. / آنتي اکسيداني قوي است.

- کاهش خستگي

# بهترین روش مصرف



- 10 میلی گرم به ازای هر کیلوگرم وزن بدن
- بهتر است در چند وعده مصرف شود.
- در هر وعده بیش از 800 میلی گرم مصرف نشود.
- عوارض مصرف: خارش و بی حسی در پوست و دستان

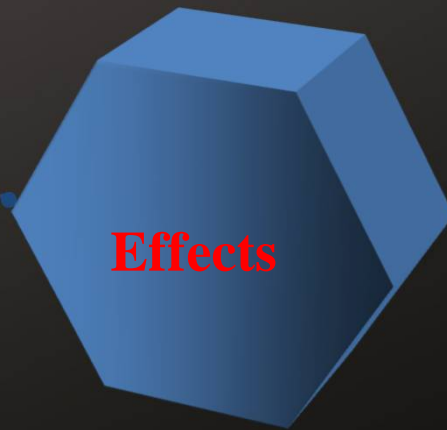


# Caffeine

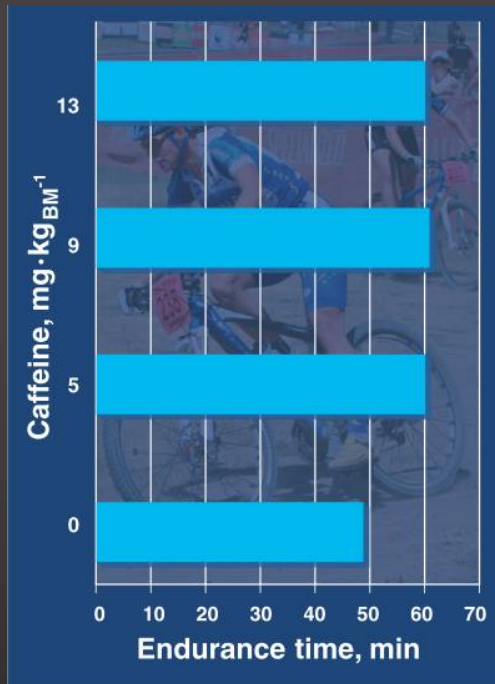


**COFFEE, CAFFEINE  
& BODYBUILDING**

# Caffeine: Effects



# Caffeine: Effects



**سلامتی:** مصرف دوز کمتر از 6 فنجان قهوه در روز (500-600 میلی گرم) افزایش عملکرد حافظه و سلامت مغز / آسم / پارکینسون /

**قدرت:** تنظیم غلظت کلسیم عضله

**کاهش چربی:** رهایش کاتکولامین ها / پیوند با گیرنده آدنوزین سلول چربی

**انرژی:** افزایش زمان رسیدن به واماندگی / افزایش سطح تستوسترون /

**ریکاوری:** کاهش کوفتگی و درد عضلانی / افزایش ذخیره سازی گلیکوژن

## Caffeine: Mode of Action



### **Chemical structure resembles adenosine**

- Binds to adenosine receptors
- Stimulates release of epinephrine
- Direct mode of action on muscle function
  - Causes sarcoplasmic reticulum to release more calcium

### **Caffeine has been reported to:**

- Enhance  $\beta$ -oxidation
- Spare Muscle Glycogen
- Sustain Muscle Force Longer

## Caffeine: Mode of Action



بر روی مغز  
بر روی بدن

• اثرات دوگانه:

• بر روی مغز:

- محرک سیستم عصبی (اتصال به گیرنده آدنوزین)
- افزایش برانگیختگی (رهایش آدرنالین)
- افزایش نشاط (رهایش دوپامین)

• بر روی بدن:

- افزایش متابولیسم چربی
- افزایش قدرت انقباض قلب
- انقباض عروق خون
- گشادی راه های تنفسی

# Caffeine And Performance



## High Intensity Exercise (Doherty, et al., 2004):

- Lower Perceived Exertion
- Increased Glycolytic Performance\*
- Increased Blood Lactate\*

\* Not all studies have shown increased performance in glycolytic activities and blood lactate (Greer et al., 1998)

## Endurance Exercise:

- Main concept is that of fatty acid mobilization and glycogen sparing
- Prolongs Endurance Exercise \*\*

\*\* Mechanism behinds enhanced endurance performance not completely understood

# Caffeine: Adverse Effects



- Mild Diuretic
  - Dehydration not likely if athlete is properly hydrating
- Tachycardia with Exercise
- Increased Blood Pressure
- Gastrointestinal Distress
- Habituation/Addiction

## **There are also effects when discontinuing use:**

- Headache
- Fatigue
- Possible Flu-like Symptoms

# Caffeine



## **Varsity female athletes listed these reasons for taking caffeine:**

- Enhanced Performance
- More Energy
- Increased alertness
- Taste

## **Listed forms Taken:**

- Beverages
- Tablets
- Energy Bars, Drinks, and Gels
- Chocolate





## Caffeine: Dosage

SOURCE	CAFFEINE CONTENT
Rockstar Zero-Carb (16 oz.)	160 mg
Monster Lo-Carb (16 oz.)	160 mg
Brewed coffee (1 cup)	60-165 mg
Double espresso (2 oz.)	45-100 mg
Red Bull Sugar-Free (8 oz.)	75 mg
Instant coffee (1 cup)	70 mg
Tea (1 cup)	40 mg
Diet Coke (12 oz.)	45 mg

- **چند هشدار:** در مصرف افراط نکنید/اعتیادآور است/دیورتیک است/اثرش طولانی مدت است./بیماران قلبی

- دوز مصرفی: حداقل 3 میلی گرم/کیلوگرم

- زمان مصرف:

- دو دوز یکسان در روز (100 الی 300 میلی گرم)

- یک وعده پس از بیداری و یک وعده یک ساعت قبل از تمرین

Caffeine paired with ephedra is potentially harmful and should be *avoided* (Powers, 2001; Mangus & Trowbridge, 2005 ).

### Dosage:

Endurance Exercise:

3-5mg/kg

Since most beverages are variable in the amounts contained, tablets are probably the most effective method.

# Carbohydrate:



## Product A

- Feature 1
- Feature 2
- Feature 3

## Product B

- Feature 1
- Feature 2
- Feature 3

# Creatine Monohydrate:

## Product A

- Feature 1
- Feature 2
- Feature 3

- Track sprints: 60–200 m
- Swim sprints: 50 m
- Pursuit cycling

### *Increased PCr Resynthesis*

- Basketball
- Field hockey
- American football
- Ice hockey
- Lacrosse
- Volleyball

### *Reduced Muscle Acidosis*

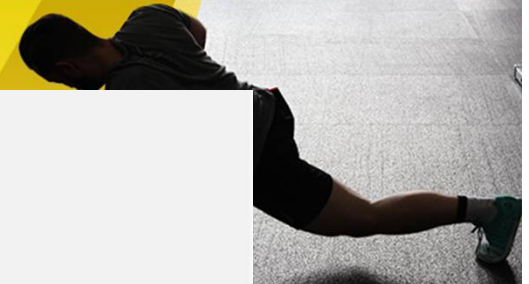
- Downhill skiing
- Water sports (e.g., rowing, canoe, kayak, paddling)
- Swim events: 100, 200 m
- Track events: 400, 800 m
- Combat sports (e.g., MMA, wrestling, boxing, etc.)

### *Oxidative Metabolism*

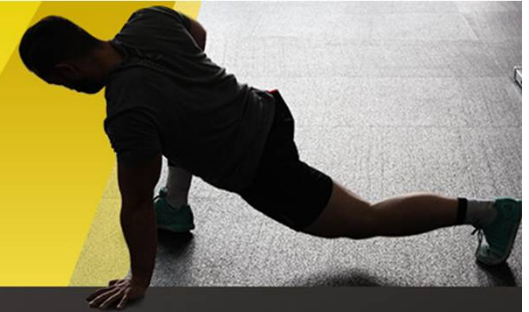
- Basketball
- Soccer
- Team handball
- Tennis
- Volleyball
- Interval training in endurance athletes

### *Increased Body Mass/Muscle Mass*

- American football
- Bodybuilding
- Combat sports (e.g., MMA, Wrestling, Boxing, etc.)
- Powerlifting
- Rugby



# Sodium Bicarbonate:



- Doses of at least  $0.3 \text{ g}\cdot\text{kg}^{-1}$
- (ingested about 1–2 h pre competition)
- facilitate  $\text{H}^+$  efflux from the cell

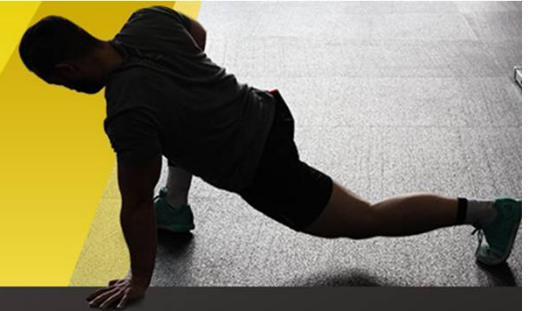
Trial	Total Work (kJ)	Peak Power (W)
Control	24.6	728.6
Placebo	24.5	727.2
Bicarbonate	26.9*	769.4*

\* Significantly higher than either control or placebo

# Water&Glucose Electrolyte Drinks:



**Body fluid loss coincides with the following five changes in body functions:**



1. Decreased plasma volume
2. Reduced skin blood flow for a given core temperature
3. Reduced stroke volume of the heart
4. Increased heart rate
5. General deterioration in circulatory and thermoregulatory efficiency in exercise

# Hypo hydration



- impacts the hormonal response to exercise
- increasing levels of hypo hydration led to progressive increases in the stress hormones:
  - cortisol
  - and norepinephrine,
  - and a subsequent increase in blood glucose

# Pre-exercise Hydration

A person in athletic wear is shown in a starting crouch on a light-colored track surface. The person's hands are on the ground, and their feet are in starting blocks. The background is a plain, light-colored wall.

1. Delays dehydration

2. Increases sweating during exercise

3. Diminishes the rise in core temperature



# Adequacy of Rehydration

**TABLE 10.2** Recommended Fluid Availability and Intake for a Strenuous 90-Minute Athletic Practice<sup>a</sup>

Weight Loss		Minutes Between Water Breaks	Fluid per Break		Fluid Availability for an 11-Member Squad	
lb	kg		oz	mL	gal	L
8	3.6	No practice	-	-		
7.5	3.4	Recommended	-	-		
7	3.2	10	8-10	266	6.5-8	27.4
6.5	3.0	10	8-9	251	6.5-7	25.5
6	2.7	10	8-9	251	6.5-7	25.5
5.5	2.5	15	10-12	325	5.5-6.5	22.7
5	2.3	15	10-11	311	5.5-6	21.8
4.5	2.1	15	9-10	281	5-5.5	19.9
4	1.8	15	8-9	251	4.5-5	18.0
3.5	1.6	20	10-11	311	4-4.5	16.1
3	1.4	20	9-10	281	3.5-4	14.2
2.5	1.1	20	7-8	222	3	11.4
2	0.9	30	8	237	2.5	9.5
1.5	0.7	30	6	177	1.5	5.7
1	0.5	45	6	177	1	3.8
0.5	0.2	60	6	177	0.5	1.9

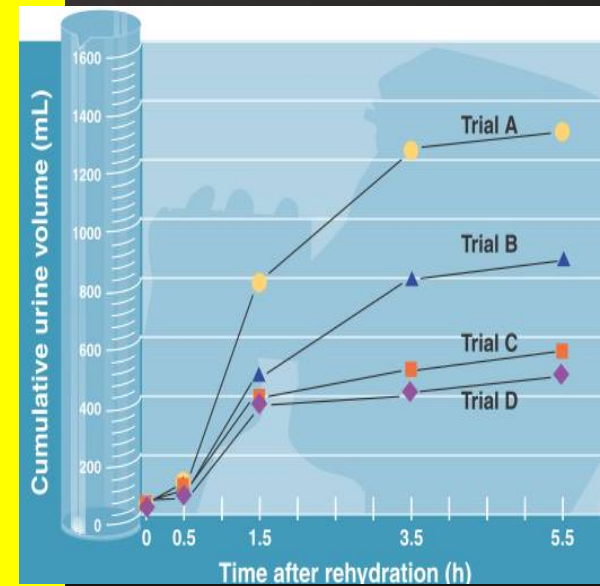
<sup>a</sup> Based on 80% replacement of weight loss.

Name	Date	Body weight		DBW (A-B)	Drink volume	Urine volume*	Sweat loss C+D-E	Exercise time	Sweat rate
		A Before exercise	B After exercise						
Mackinzie	9/15	61.7 kg	60.3 kg	1400 g	420 mL	90 mL	1730 mL	90 min	19.2 mL·min <sup>-1</sup>
								1.5 h	1153 mL·h <sup>-1</sup>

# Sodium Facilitates Rehydration



- ✓ high amounts of sodium to the rehydration drink ( $100 \text{ mmol}\cdot\text{L}^{-1}$ )
- ✓ combining solid food with appropriate sodium
- ✓ content and plain water.
- ✓ sweat loss depletes the body of 13 to 17 g of salt ( $2.3\text{--}3.4 \text{ g}\cdot\text{L}^{-1}$  of sweat),
- ✓ about 8 g more than typically consumed daily in the diet.
- ✓ (ACSM) recommends sports drinks contain 0.5 to 0.7 g of sodium per liter of fluid consumed during exercise



# Major Sports Drink



	Calories	Carbohydrate (g)	Extras
<b>Waters</b>			
Tap water	0	0	Minerals—vary by source
Dasani	0	0	Spring source
Fiji	0	0	Artesian source
Penta	0	0	Purified
<b>Fitness waters</b>			
ChampionLyte	0	0	Electrolytes
Life O <sub>2</sub>	0	0	10 times O <sub>2</sub> of tap water
Propel	10	3	Electrolytes, vitamins
Reebok	12	3	Electrolytes, vitamins, trace minerals
<b>Sports drinks</b>			
All Sport	70	20	No longer carbonated, vitamins B and C
G-Push (G <sup>2</sup> )	70	18	Electrolytes, vitamins
Gatorade	50	14	Electrolytes
GU <sub>2</sub> O	50	14	Electrolytes
Powerade	72	19	Electrolytes, vitamins
Simple sports drink	80	21	Electrolytes, vitamin C
<b>Recovery drinks</b>			
Endurox R <sup>4</sup>	180	35	Electrolytes, vitamins
G-Push (G <sup>4</sup> )	110	27	Electrolytes, vitamins, trace minerals
Gatorade energy drink	207	41	Vitamins
<b>Energy drinks</b>			
Red Bull	109	27	Taurine, caffeine, vitamins
SoBe adrenaline rush	135	35	Taurine, ribose, caffeine

# Drink Composition and Choice of Rehydration Beverage



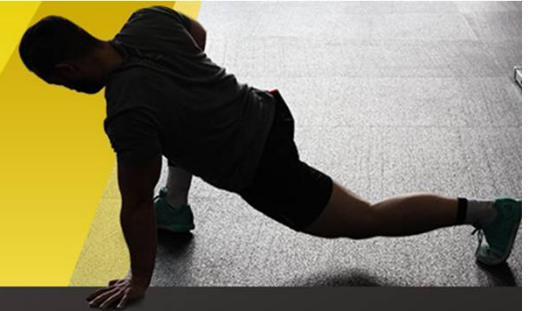
- Carbohydrate
- Electrolytes

## Carbohydrate-Electrolyte Composition and Osmolarity of Some Sports Drinks and Other Types of Beverages



	Carbohydrate	Sodium	Potassium	Osmolarity
	(g/100 mL)			(mOsm/kg.H <sub>2</sub> O)
<b>Sports Drinks</b>				
Gatorade <sup>®</sup>	6	46	12	280
Powerade <sup>®</sup>	8	22.5	12	381
Lucozade <sup>®</sup>	6.4	50	12	285
Isostar <sup>®</sup>	7.7	70	18	322
<b>Other Beverages</b>				
Soda (Coca-Cola <sup>®</sup> Classic)	11	5	0	700
Skim milk (0.1%)	5.2	53	172	283
Orange Juice (Tropicana <sup>®</sup> )	10.8	0	190	663
Energy Drink (Red Bull <sup>®</sup> )	11.3	80.5	0	601
Oral Rehydration Solution (Pedialyte <sup>®</sup> )	2.5	104	79	250

# Timing of Fluid Ingestion



- Before Exercise
- During Exercise
- After Exercise

# Before Exercise



- fluid intake in the preceding 3 to 4 hours
- 5 to 7 mL per kg of body mass
- Hyper hydration
  - dilutional hyponatremia
  - as plasma expanders such as glycerol may work as a masking agent

# During Exercise



- Drink periodically in amounts according to their sweating rate



# After Exercise



- **Volume Of Fluid**
  - intake for every kg (or L) of body weight loss should be 1.5 L (or 1.5-fold)
- **Electrolytes**
  - (about 0.30.7 g of sodium per liter to replace losses)

## five steps to reduce risk of overhydration and hyponatremia



**Step 1.** Two to three hours before exercise, drink 400 to 600 mL (14–22 oz) of fluid.

**Step 2.** Drink 150 to 300 mL (5–10 oz) of fluid about 30 minutes before exercise.

**Step 3.** Drink no more than 1000 mL·h<sup>-1</sup> (32 oz) of plain water spread over 15-minute intervals during or after exercise.

**Step 4.** Add a small amount of sodium (approximately 1/4 to 1/2 tsp of salt per 32 oz) to ingested fluid. Commercial sports drinks are also effective in providing water, carbohydrate fuel, and electrolytes.

**Step 5.** Do not restrict dietary salt. rehydration drink facilitates intestinal water uptake via the glucose–sodium transport mechanism

# ○ Recovery Enhancement Supplements



Neuro-Protection

Joint-Protection

Immune-Protection

Carbohydrate



# Neuro-Protection: Creatine



## Product A

- Feature 1
- Feature 2
- Feature 3

## Product B

- Feature 1
- Feature 2
- Feature 3

# Neuro-Protection: Omega-3



## Product A

- Feature 1
- Feature 2
- Feature 3

## Product B

- Feature 1
- Feature 2
- Feature 3

# OMEGA -3 FATTY ACIDS



- long-chain polyunsaturated fatty acids
- found in fish oils (mainly EPA and DHA) and flaxseed oil
- Reduce oxidant stress (oxidative stress or free-radical damage is a factor of importance in the development of inflammatory events).
- Suppress the production of pro inflammatory compounds in the body and therefore influence inflammatory conditions such as arthritis, diabetes, inflammatory bowel disease, cancer, autoimmune disorders, and aging.
- Improve serum lipids and provide cardiovascular protection.

- 
- ✓ Provide protection against stress, cognitive aging, and depression.
  - ✓ Blood pressure, clotting, immune response, insulin resistance, and triglyceride levels are all

positively affected by the omega-3s in EFA

- ✓ May be effective in the prevention of coronary heart disease and headaches.
- ✓ Aid in weight and fat loss, especially when combined with CLA (see below).
- ✓ Be positively associated with peak bone density in young men

# Neuro-Protection: Citicoline



## Product A

- Feature 1
- Feature 2
- Feature 3

## Product B

- Feature 1
- Feature 2
- Feature 3



# Joint-Protection:

## Curcumin



### Product A

- Feature 1
- Feature 2
- Feature 3

### Product B

- Feature 1
- Feature 2
- Feature 3

# Immune-Protection: Curcumin



## Product A

- Feature 1
- Feature 2
- Feature 3

## Product B

- Feature 1
- Feature 2
- Feature 3

## ***JOINT SUPPORT FORMULA***

- ✓ Glucosamine Sulfate
- ✓ Chondroitin Sulfate
- ✓ Green Tea Extract
- ✓ Coenzyme Q10
- ✓ Omega-3 And Omega-6 Oil



# Weight Loss Supplements

- Make Effective Presentations
- Using Awesome Backgrounds
- Engage your Audience
- Capture Audience Attention



# ○ Weight Loss Supplements

Meal Replacement

Appetite Suppressant

Macronutrient Blockers

Thermogenics

Lipolytic Nutrients

Herbal Diuretics



# Meal Replacement:



## Product A

- Feature 1
- Feature 2
- Feature 3

## Product B

- Feature 1
- Feature 2
- Feature 3

# Appetite Suppressant & Macronutrient Blockers:



## Product A

- Feature 1
- Feature 2
- Feature 3

## Product B

- Feature 1
- Feature 2
- Feature 3

# Appetite Suppressant & Macronutrient Blockers:

## Beta-D-Glucans



### **Product A**

- Feature 1
- Feature 2
- Feature 3

### **Product B**

- Feature 1
- Feature 2
- Feature 3



Appetite Suppressant &

Macronutrient Blockers:

Chitosan



**Product A**

- Feature 1
- Feature 2
- Feature 3

**Product B**

- Feature 1
- Feature 2
- Feature 3

# Appetite Suppressant & Macronutrient Blockers:

## Glucomannan



### **Product A**

- Feature 1
- Feature 2
- Feature 3

### **Product B**

- Feature 1
- Feature 2
- Feature 3

Appetite Suppressant &

Macronutrient Blockers:

Dietary Fiber



**Product A**

- Feature 1
- Feature 2
- Feature 3

**Product B**

- Feature 1
- Feature 2
- Feature 3

# Appetite Suppressant & Macronutrient Blockers:

## Glycomacropeptides



### **Product A**

- Feature 1
- Feature 2
- Feature 3

### **Product B**

- Feature 1
- Feature 2
- Feature 3

# Appetite Suppressant &

# Macronutrient Blockers:

## Guar Gum & Gum Arabic



### **Product A**

- Feature 1
- Feature 2
- Feature 3

### **Product B**

- Feature 1
- Feature 2
- Feature 3

# Appetite Suppressant & Macronutrient Blockers:

## Gum Arabic



### **Product A**

- Feature 1
- Feature 2
- Feature 3

### **Product B**

- Feature 1
- Feature 2
- Feature 3

# Herbal Diuretics:



## Product A

- Feature 1
- Feature 2
- Feature 3

## Product B

- Feature 1
- Feature 2
- Feature 3

# Lipolytic Nutrients:



## Product A

- Feature 1
- Feature 2
- Feature 3

## Product B

- Feature 1
- Feature 2
- Feature 3



# Psycotropic&Nutropic Nutrients:



## Product A

- Feature 1
- Feature 2
- Feature 3

## Product B

- Feature 1
- Feature 2
- Feature 3

# Termogenics:



## Product A

- Feature 1
- Feature 2
- Feature 3

## Product B

- Feature 1
- Feature 2
- Feature 3

## وعدہ قبل تمرین



- maximize energy levels,
- minimize protein catabolism,
- increase protein synthesis
- increase GH and testosterone levels,
- and decrease cortisol

## وعدہ قبل تمرین



• **Beta-Alanin** (30-60 دقیقه قبل تمرین)

• **Whey Protein Isolate(WPI)**

– (25 ال 40 گرم) (30 دقیقه قبل تمرین)



- Alpha-lipoic acid
- Banaba extract
- Caffeine USP
- Calcium (as calcium phosphate)
- Cayenne (pepper)
- Chromium
- Cinnamon
- Co-enzyme Q10
- Cordycepic acid
- Dimethylglycine
- Ephedrine alkaloids
- Ginger
- Glutathione
- Inosine
- L-alanine
- N-acetyl cysteine
- Octacosanol
- Pyruvic acid
- Taurine
- Vitamin A
- Vitamin C
- White willow extract
- Yohimbine alkaloids

# حين تمرين

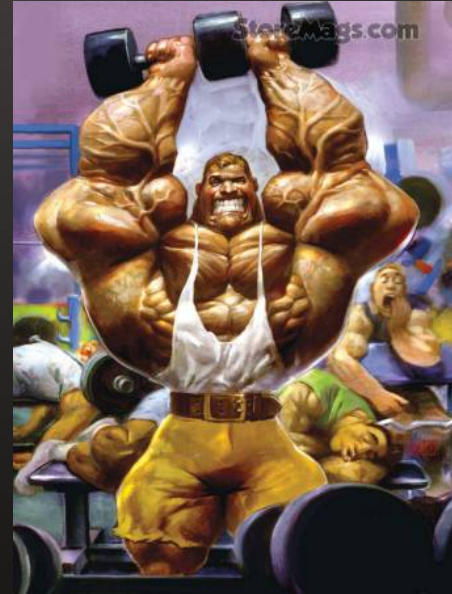


- ✓ provide rehydration, electrolyte replacement,
- ✓ energy replacement,
- ✓ increased protein synthesis
- ✓ decreased muscle catabolism
- ✓ decrease overtraining effects and muscle injury.

# حین تمرین



- ✓ Arginine
- ✓ Calcium
- ✓ Creatine
- ✓ Glutamine peptides
- ✓ Leucine
- ✓ Magnesium
- ✓ Phosphorus
- ✓ Potassium
- ✓ Ribose
- ✓ Sodium
- ✓ Taurine



## بعد تمرين



- ✓ Reversing the decreased protein synthesis
- ✓ Replenishing muscle glycogen
- ✓ Increasing protein synthesis
- ✓ decreasing protein catabolism post exercise
- ✓ Raising levels of growth hormone and testosterone
- ✓ Increasing the efficiency of recuperation





## بعد تمرين



• Creatine (بلافاصله بعد تمرين)

• Whey protein hydrolysate (WPH) (30 گرم بلافاصله بعد تمرين)

A person is shown in a starting crouch on a track, positioned on the right side of the image. The background is split into a bright yellow upper half and a dark grey lower half. The person is wearing a dark t-shirt, shorts, and green sneakers. The floor is a light-colored track surface.

[fppt.com](http://fppt.com)