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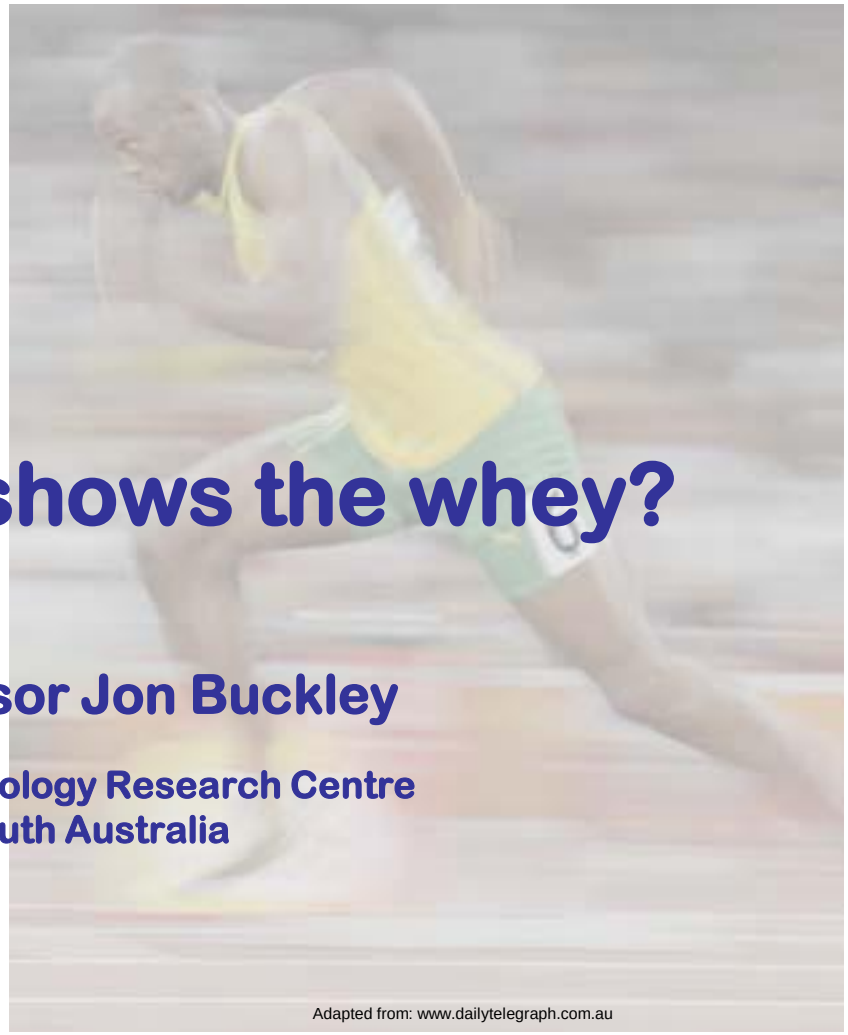

Fast food – dairy shows the whey?

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Adapted from: www.dailytelegraph.com.au

Investigating nutrition and exercise strategies for improving health and performance




Global sports nutrition market projected to reach USD$91.8bn by 2013[1]

Whey protein is a major component of sports nutrition supplements

From: www.dairyaustralia.com.au

1. BCC Research - http://www.bccresearch.com/pressroom/report/code/FOD043A




Whey protein used to increase muscle mass and strength

Use of whey protein sustainable in this market with limited evidence?

From: www.beijing2008.cn




EFSA recently rejected health claims for whey protein increasing muscle mass and strength [1]

Main reasons given for EFSA decision were:

- use of surrogate measures of mass/strength (eg protein synthesis)
- most studies compared whey with carbohydrate
  - might be a general protein effect
- only 3 small studies compared whey with other protein sources
  - results were conflicting

1. EFSA Panel on Dietetic Products. EFSA Journal 8:1818-1845, 2010.




Cribb et al [1]

Resistance-trained males (~26 yr) consumed usual diet during 10 weeks of resistance training, randomised to 1.5 g/kg/day of:

- **whey protein isolate (n=6)**
- **casein (n=7)**

From: www.abc.net.au.

[1] In t J Sport Nutr Exerc Metab 16:494-509, 2006.

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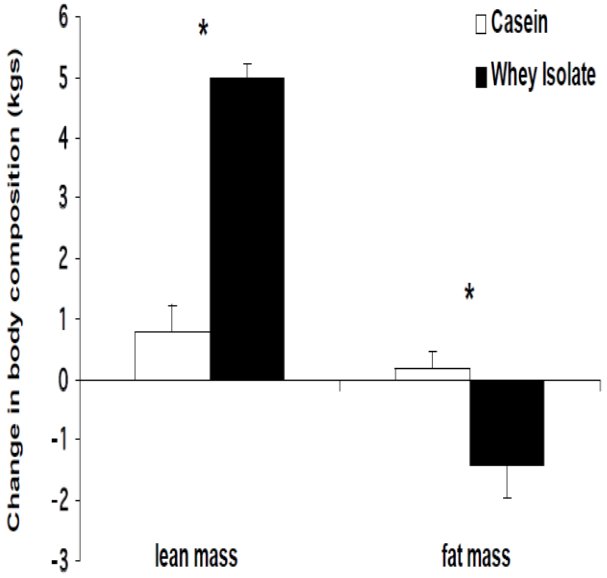
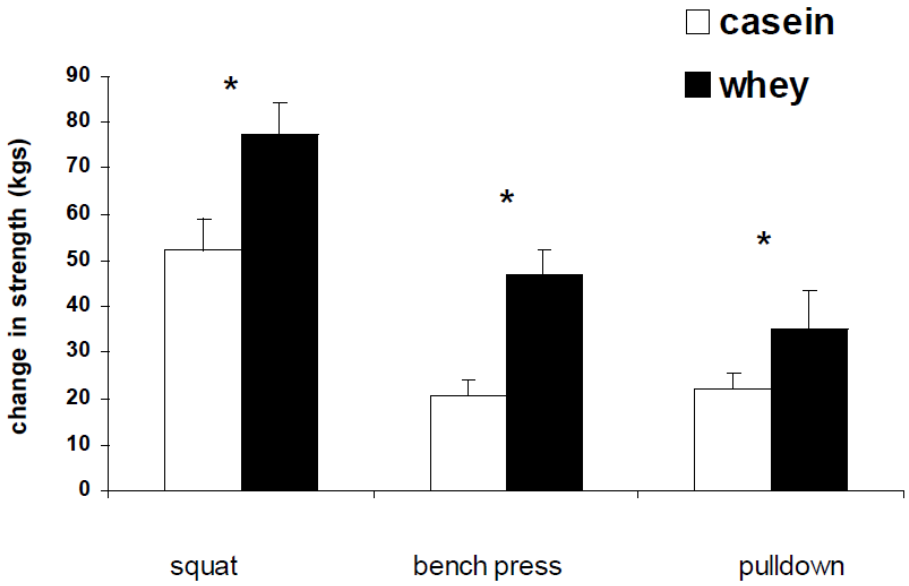
Greater increases in lean mass and strength with whey





[1] In t J Sport Nutr Exerc Metab 16:494-509, 2006.




Demling and DeSanti [1]

Overweight police officers (28-40 yr) randomised to

12 weeks dietary energy restriction (20% energy):

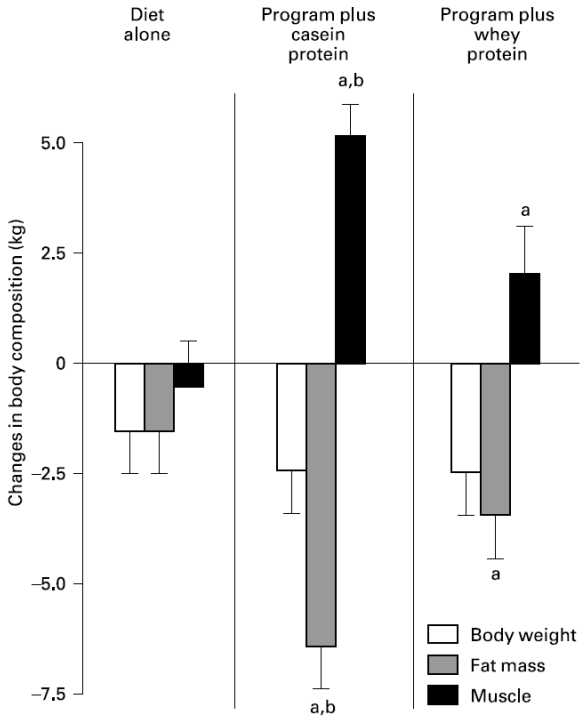
- **+ no additional treatment (control)(n=10)**
- **+ resistance training + whey protein (1.5 g/kg/day) (n=14)**
- **+ resistance training + casein (1.5 g/kg/day) (n=14)**

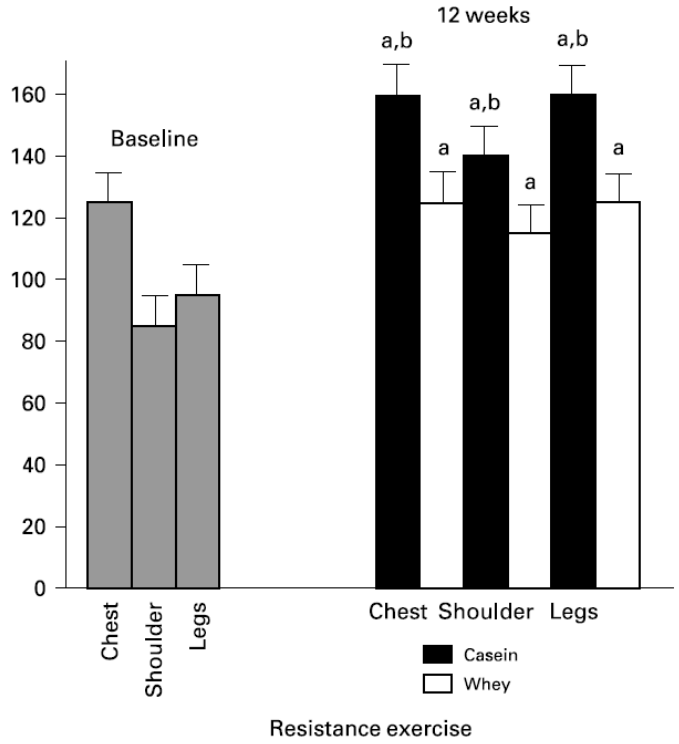
From: www.static.tweentribune.com

[1] Ann Nutr Metab 44:21-29, 2000.




Greater increases in lean (muscle) mass and strength with casein





[1] Ann Nutr Metab 44:21-29, 2000.




Candow et al [1]

Untrained volunteers (18-35 yr)

6 weeks of resistance training

Supplementation with 1.2 g/kg/day of:

- whey protein (n=9; 6 F, 3 M)
- soy protein (n=9; 6 F, 3 M)
- maltodextrin (placebo)(n=9; 6 F, 3 M)

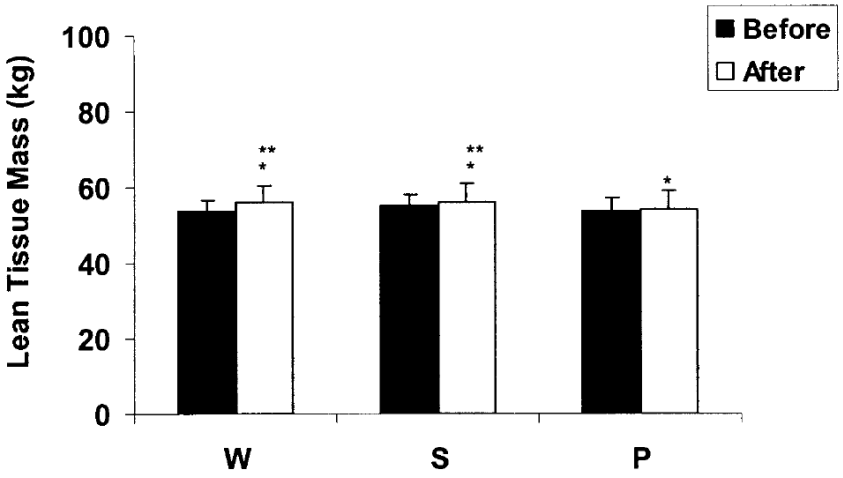
From: www.123rf.com

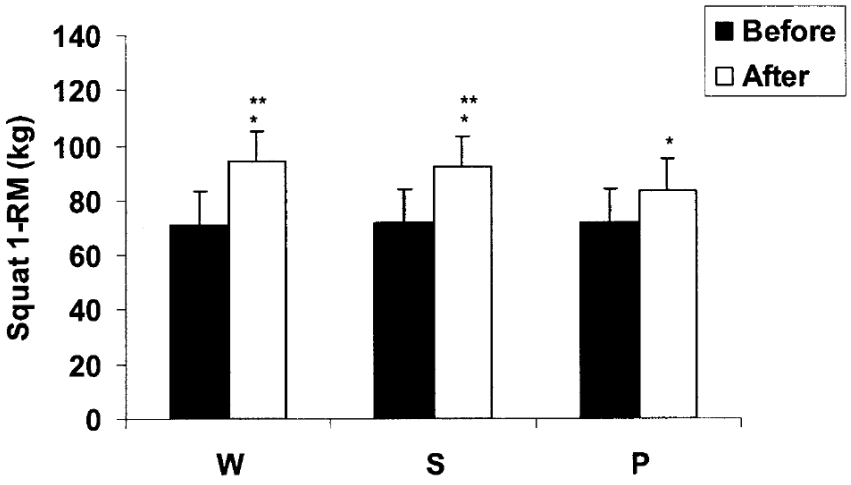
[1] In t J Sport Nutr Exerc Metab 16:233-244, 2006.




Protein provided greater increases in lean mass and strength compared with maltodextrin

- no difference between protein sources





[1] In t J Sport Nutr Exerc Metab 16:494-509, 2006.




More studies are required to assess the effects of whey protein on strength and muscle mass

These studies must:

- be appropriately powered
- use other protein sources as a comparator
- use hard endpoints not surrogate markers

From: www.tiptoptens.com




Whey fraction of bovine colostrum

From: www.sarahness.net




Colostrum - first milk produced after calving

- Rich source of growth factors and nutrients
- Vital for growth and development of the calf

From: dpiw.tas.gov.au




Growth factors potentially beneficial for improving athletic performance

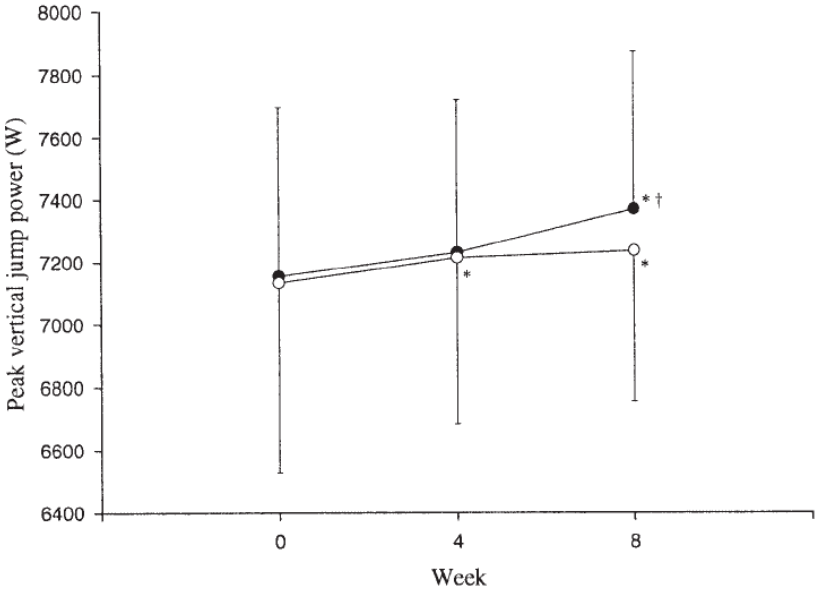
From: www.iaaf.org




Improved peak power

8 weeks of strength/power training

60 g/day of BC (n=26) or WP (n=25)



From: Buckley et al. J Sport Sci 21:577-588, 2003




Colostrum less available than milk



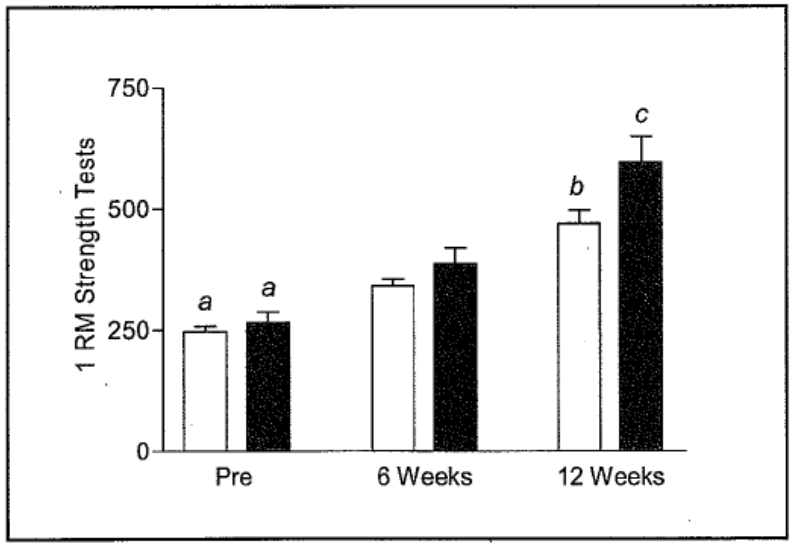

Whey growth factor extracts

From: www.sarahness.net




Crittenden et al[1]

- Healthy untrained males (20 yr)
- 12 weeks of resistance training
- Supplemented with:
  - 20 g/day WPI (n=7)
  - 20 g/day WPI + 2 g/day WGFE (n=7)
- Strength increased more with WGFE



[1] Aust J Dairy Technol 64:133-137, 2009.




Whey protein hydrolysates

From: www.sarahness.net



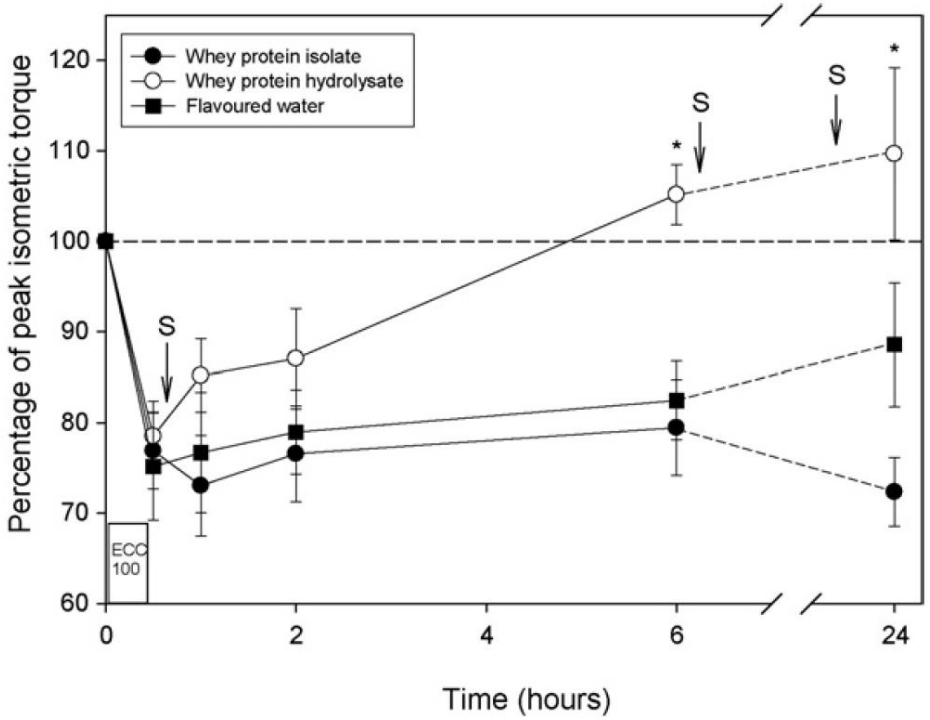

Buckley et al [1]

- Healthy sedentary males (~18-30 yr) performed 100 maximal eccentric contractions of the knee extensors to induce muscle damage.
- Randomised to consume 250 ml of flavoured water containing:
  - nothing (control) (n=14)
  - 25 g of whey protein isolate (WPI) (n=14)
  - 25 g of hydrolysed WPI (Natraboost XR; MG Nutritionals)(n=15)

[1] J Sci Med Sport 13:178-181, 2010.




WPI hydrolysate promoted more rapid recovery of muscle strength



[1] J Sci Med Sport 13:178-181, 2010.




SUMMARY:

Whey has potential to provide a number of benefits for athletes

- additional evidence required for whey protein

- colostrum beneficial, but expensive
  - alternative is to extract growth factors from whey

- hydrolysates provide range of opportunities

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From: www.dailymail.co.uk

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