



Milk & Muscle Recovery

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Outline

- EIMD
- Milk
- Research
 - Does milk improve recovery?
 - When should athletes drink milk?
 - How much milk should athletes drink?
- Take-home message and ‘the future’

Exercise-Induced Muscle Damage

- EIMD is a process involving the breakdown of the muscle caused by eccentric exercise.
- Detrimental implications for athletes:
 - DOMS
 - Decrements in muscle performance
 - Increase in intramuscular enzymes (CK, Mb, LDH)
- Recovery Interventions required.

Milk

- Why use milk?
 - Natural product
 - Cheap & accessible
 - Becoming a very “now” product
- Scientific Reasons
 - Protein/CHO supplements previously shown to attenuate EIMD
 - Contains vital ingredients
 - Shown to stimulate muscle protein synthesis (Elliot *et al*, 2006, Med. Sc. Sp. Ex.)

Why milk is better for your muscles than a sport drink

By Martyn Brown

FOOTBALL legend Ian Rush famously advised children to drink more milk - or they would only be good enough to play for Accrington Stanley.

Two decades on, it seems the iconic 1980s television advert - showing two boys squabbling over a bottle of the white stuff - may well have been spot on.

Scientists have discovered that milk really can help the body recover after exercise.

Tests showed that gulping down a glass provides muscles after they are damaged during physical activity.

The findings even showed that milk was better than popular sports drinks at reducing muscle damage.

The study was designed to show how to reduce exercise-induced muscle damage (EIMD), which is the result of the break-



PINT TAKEN: Ray Clemence

down of protein in the muscle, and reduces the body's ability to perform.

The findings showed that when consumed immediately after muscle-damaging exercise, semi-skimmed milk and milk-based supplements helped preserve more muscle than sports drinks or water.

Researchers discovered that milk lacks the effects of EIMD

by providing protein and carbohydrates, which may stop the protein from being broken down.

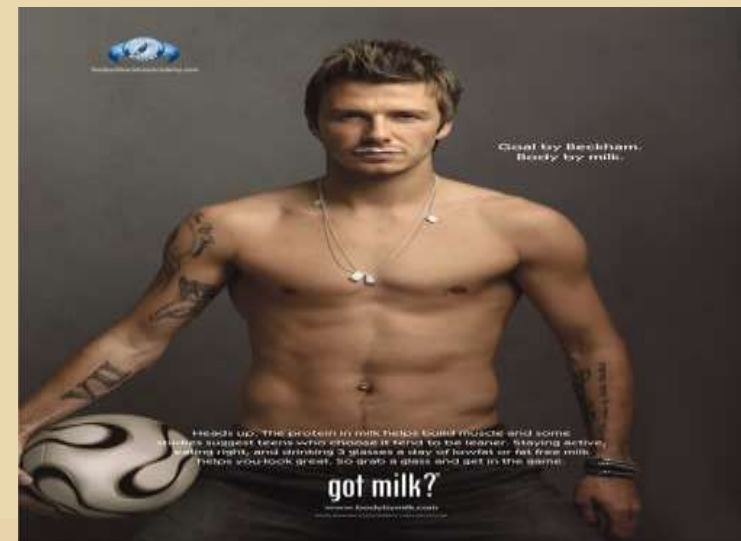
Nutritionist Dr Judith Brown, of the Dairy Council, said: "This study supports the growing volume of literature which suggests that milk is a powerful post-exercise recovery aid."

Previous research has shown that milk is good at replenishing the body but this is the first study to show that it may actually reduce muscle damage.

The study was carried out at Northumbria University in Newcastle and the findings were published in the Applied Physiology, Nutrition, and Metabolism journal.

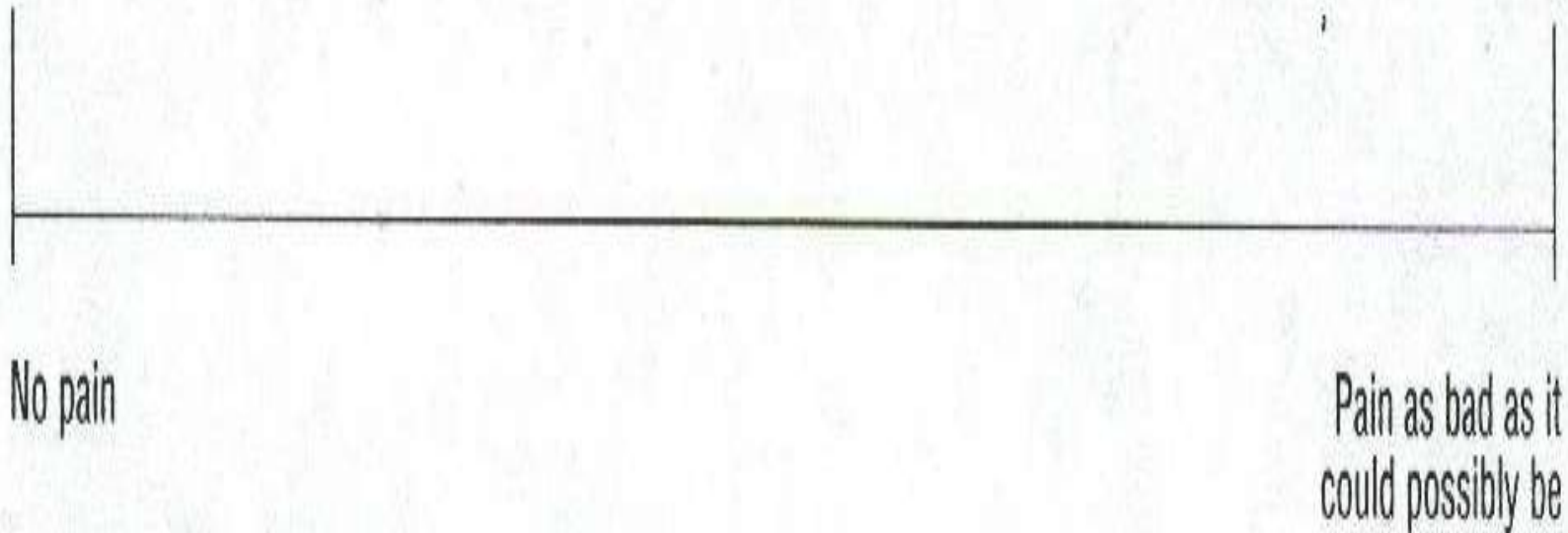
Milk has long been a favourite of athletes both past and present. Goalkeeper Ray Clemence was one of the footballers in the 1970s who advertised milk on behalf of the Milk Marketing Board.

US swimmer Michael Phelps, who won eight gold medals at the Beijing Olympics, is said to drink chocolate milk between races.



Methods

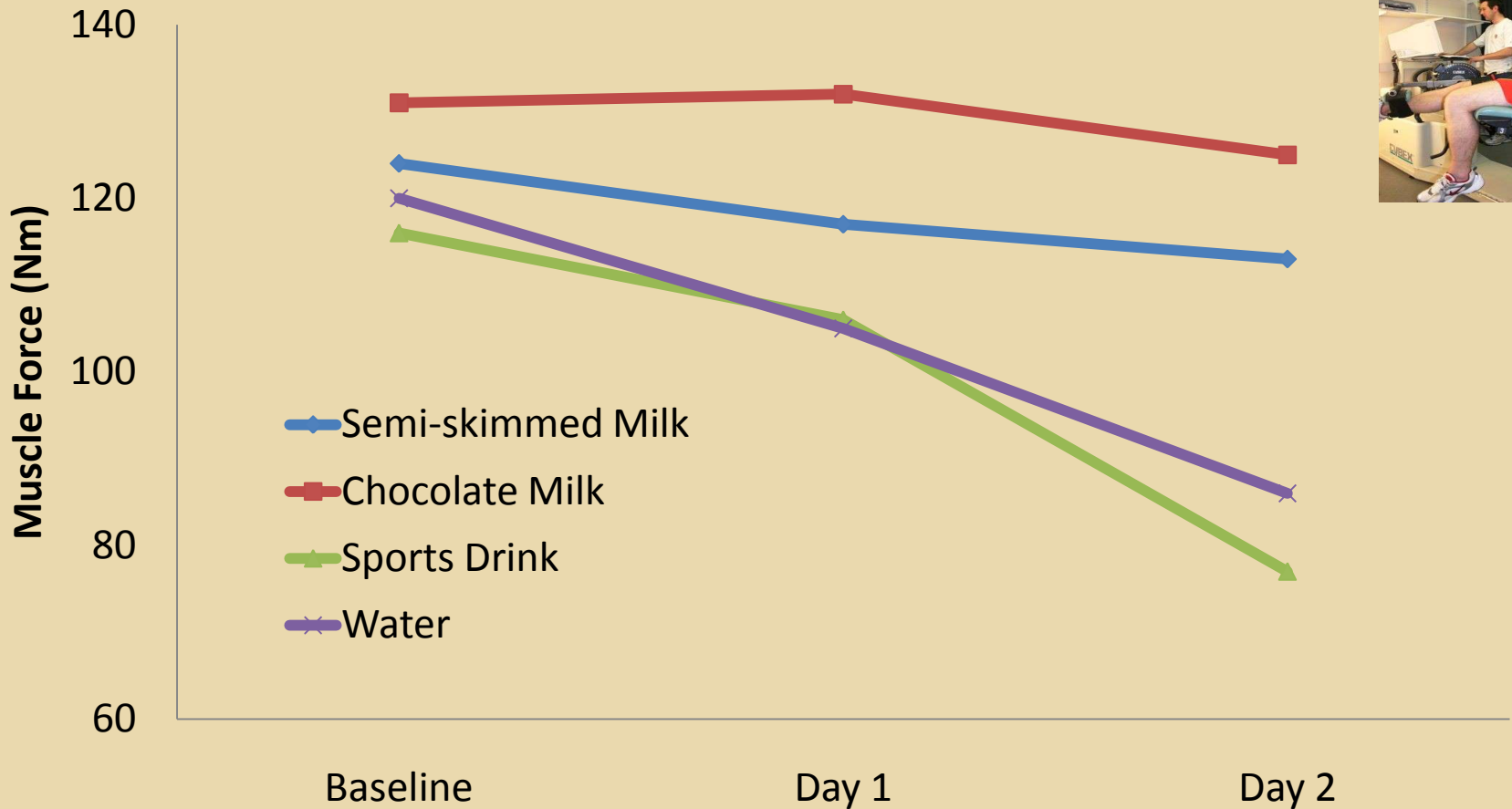
c. Visual Analog Scale (VAS)²



¹ If used as a graphic rating scale, a 10 cm baseline is recommended.

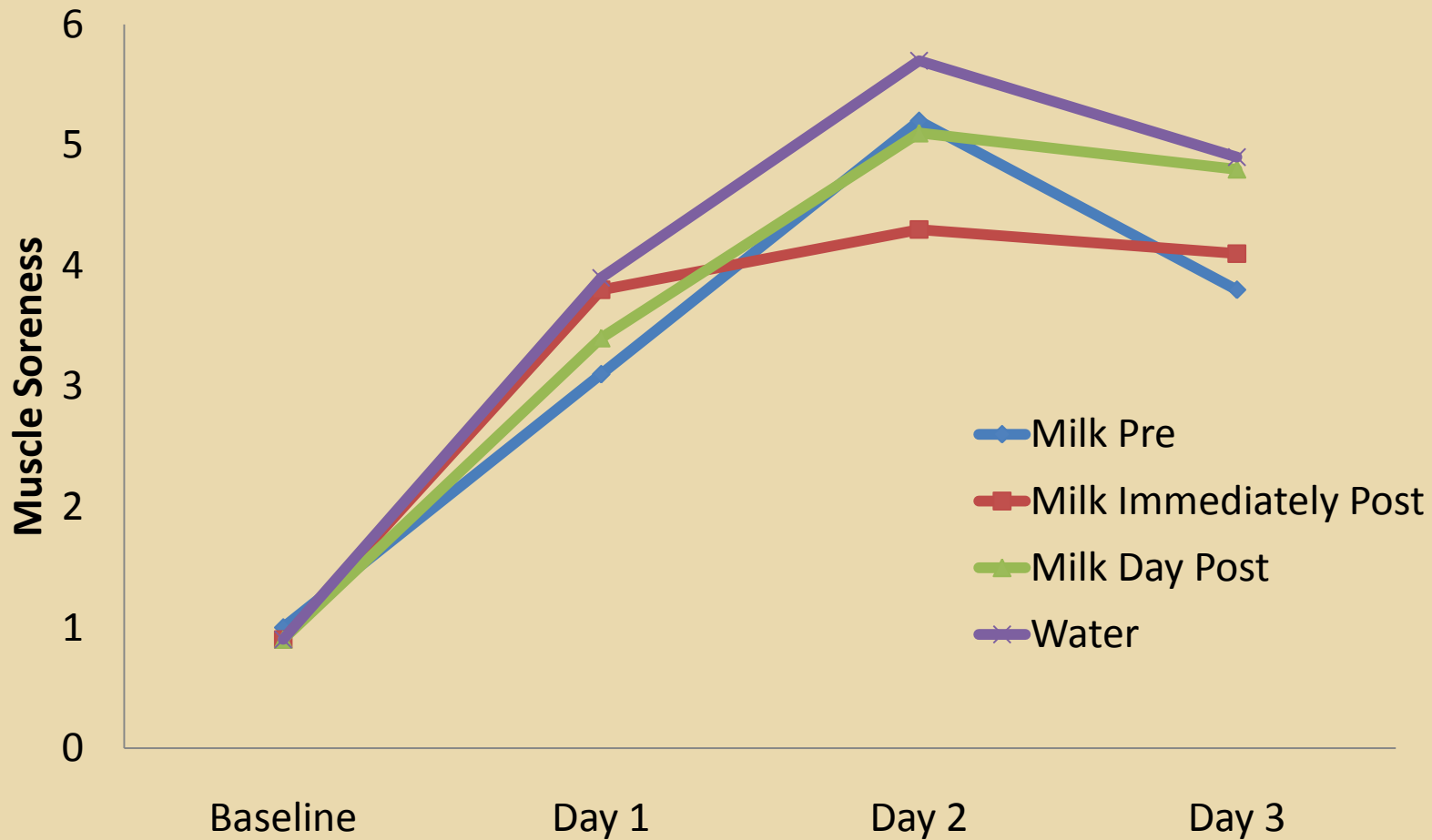
² A 10 cm baseline is recommended for VAS scales.

Does Milk Improve Recovery?

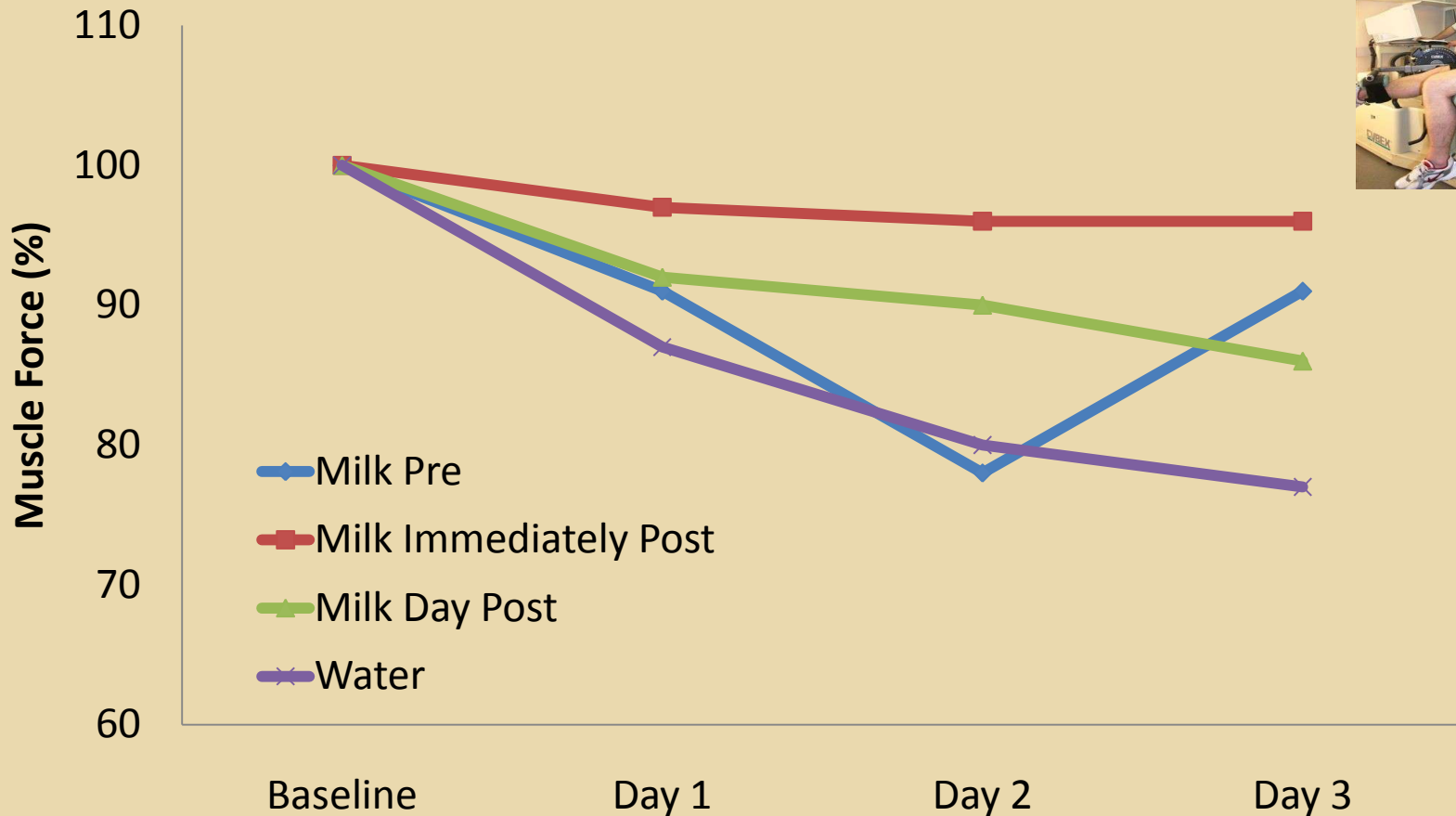


Cockburn *et al*, 2008, *App. Phys. Met. Nut.*

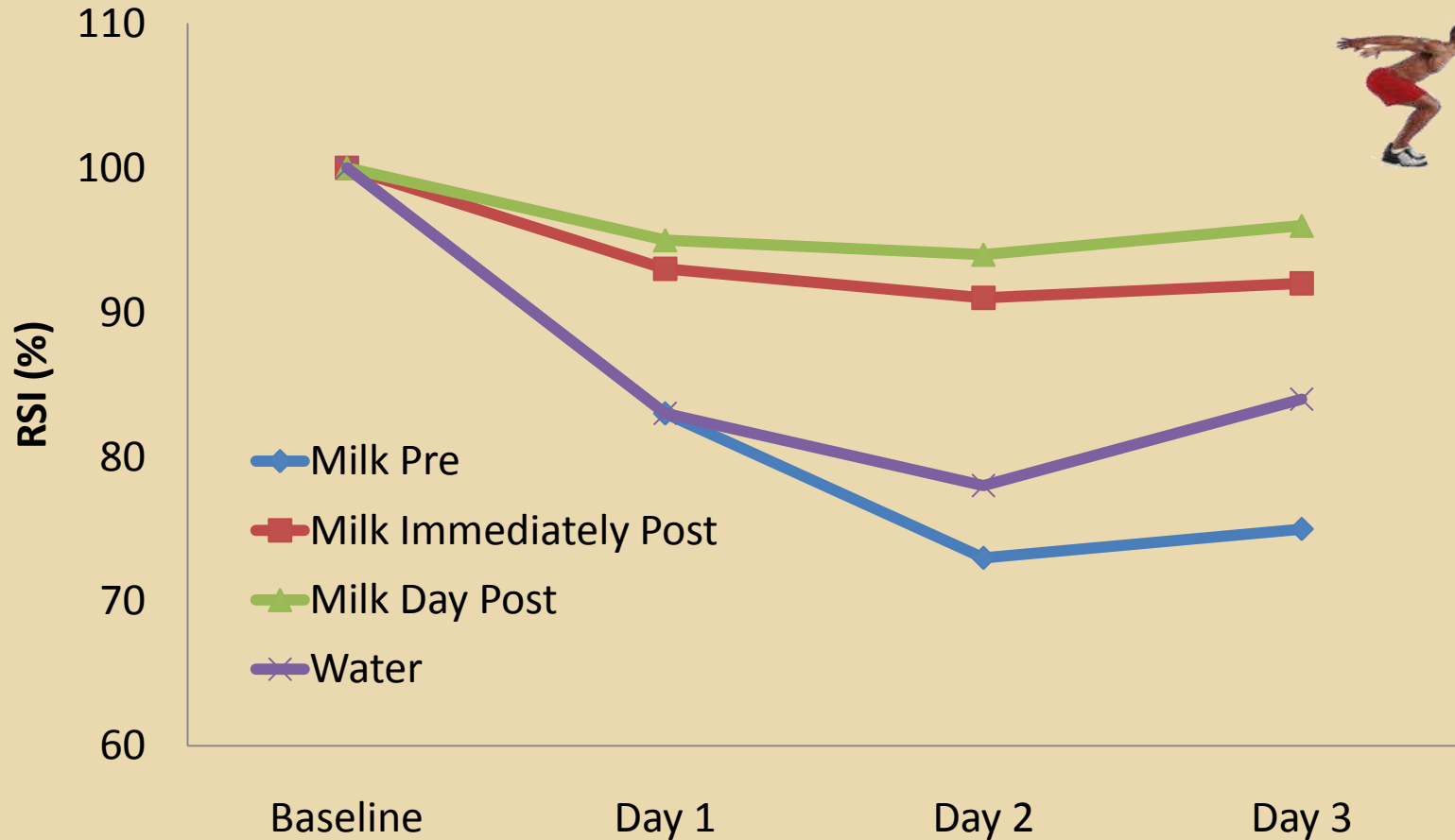
When should athletes drink milk?



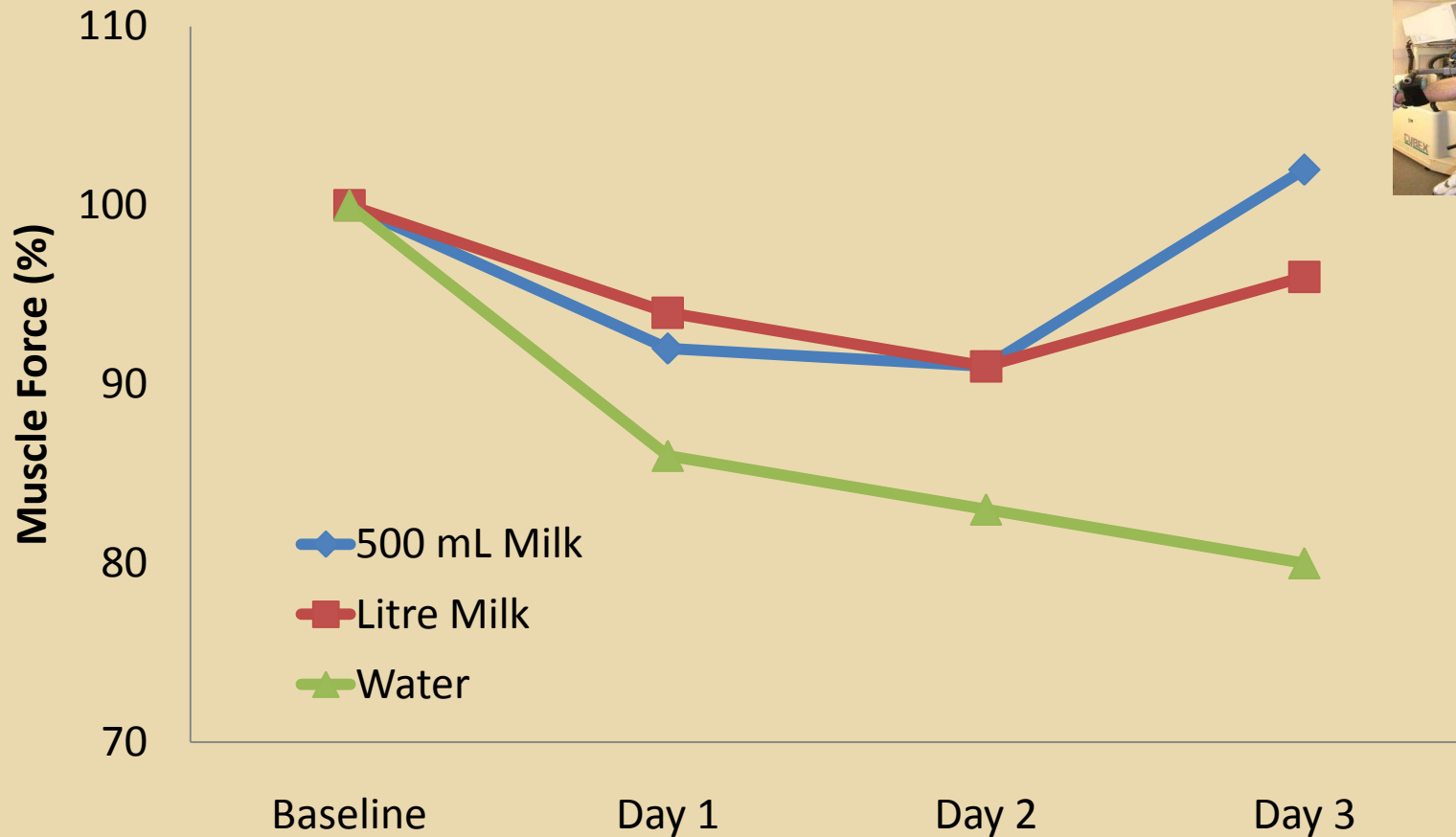
When should athletes drink milk?



When should athletes drink milk?



How much milk should athletes drink?



Take-home Message

- Milk alleviates active muscle soreness and drops in muscle performance
- Drink milk immediately following exercise
- Athletes can drink as little as 500 mL

“Half a litre of milk immediately following exercise”

The Future

- Mechanisms
- Real world relevance / Applied
- Variety of milk
- Long-term Intake



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