

# CAMPAÑA PANAMERICANA DE CONSUMO DE LÁCTEOS



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## Milk and Resistance Exercise

### **Summary:**

Milk is an excellent source of nutrients, vitamins and minerals. There has been growing interest in the use of milk as an exercise recovery beverage, especially after resistance training. Based on the limited scientific research, milk appears to be an effective post-resistance exercise beverage that enhances the adaptations to this type of training and leads to greater fat loss. Milk represents a very functional, cost effective and nutrient dense beverage choice for individuals who partake in resistance training, compared to traditional sports drinks.

### **Milk and Resistance Exercise:**

Many people participate in resistance exercise and resistance sports. When these activities are performed correctly and at the correct intensity, they lead to increases in muscle size and strength.

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As muscles are made of primarily protein, for muscle growth to occur there must be a chronic increase in the synthesis of muscle proteins and/or a decrease in the breakdown of muscle proteins.

Resistance exercise has been shown to result in both an increase in the synthesis of muscle proteins and the breakdown of muscle proteins, but the increase in synthesis is greater than the increase in breakdown [1]. Furthermore, it has also been proven that proper nutritional intake is also needed to optimize the adaptations that occur after resistance exercise. Nutritional intake of amino acids [2], protein [3], carbohydrates [4-6], or mixed macronutrient compounds [6-8] enhanced the adaptations that occur following resistance exercise, when they are taken soon after the exercise. Therefore, the adaptations in muscle to resistance exercise can be influenced through the nutritional intake of the main nutrients found in low-fat milk; protein and carbohydrates. There have been some studies looking at the direct influence of milk intake after resistance exercise. They have shown that consuming either non-fat milk or whole milk improves the protein metabolism response to the exercise [9]. Other research has also shown that fat-free milk intake after exercise increased the rate of muscle protein [10]. The increase in protein synthesis after resistance exercise with milk consumption may be due to a slow but sustained increase in blood amino acids (building blocks of protein), providing a more sustained delivery of amino acids for skeletal muscle protein synthesis with the consumption and digestion of milk. Over the long term, such increases in protein synthesis should result in greater gains in strength and muscle mass. Recent research has shown that when 12 weeks of resistance training was combined with fat-free milk intake (500 mL) immediately after the exercise, the greatest increase in muscle fibre size and the greatest increase in lean mass occurred, as compared to groups that consumed a soy based beverage or a traditional carbohydrate based sports drink after each training session [11]. Interestingly, the group that consumed the milk after the exercise also had the greatest decline in body fat over the course of their training

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There is growing amounts of evidence, both acute and long-term, to support the use of low-fat milk as a resistance training recovery beverage. The intake of low-fat milk appears to create a favourable environment to enhance the adaptations following resistance exercise. Furthermore, with longer term training, it appears that greater gains in lean mass and muscle growth occur [11]. Milk intake after resistance training may also result in greater losses of body fat as compared to the consumption of other drink types or with just training alone [11]. Therefore, milk is an excellent choice as a recovery beverage following resistance exercise and training, as it can further enhance the adaptations resulting from this form of exercise.

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