Hydration and Muscle Damage

An October 2005 in the International Journal of Sport Nutrition and Exercise Metabolism looked at the effects of fluid ingestion in alpine skiers. Skiers were given a carbohydrate-protein fluid, plain water, or no fluids in this study. The study found that those skiers ingesting the carbohydrate-protein fluid sustained the least amount of exercise-induced muscle damage, followed by those drinking only water. The no-fluid group had the most amount of exercise-induced muscle damage.

Seifertr JG, et al. Int J Sport Nutr Exerc Metab. 2005 Oct;15(5):528-36. Muscle damage, fluid ingestion, and energy supplementation during recreational alpine skiing.

What does this mean to you?

Whether you are a skier or not, this study says a lot about hydration and fuel replacement. Providing your body with carbohydrates (simple sugars) and proteins (amino acids) in liquid form will minimize the amount of damage to your exercising muscles-meaning you will be less sore after a workout. Less soreness can theoretically lead to less injury, as your form will not be compromised by pain. Damaged muscles are more prone to repetitive stress injuries in general.

The best way to provide carbs and proteins during exercise (in a way that won't cause a 'gut-bomb') is through a 6-8% carb solution (just about all sports drinks have this concentration) and about 1-2 tablespoons of your favorite protein powder. Remember, this amount of protein is just enough to minimize muscle soreness and in an amount that won't slow you down...not the same amount that is required for post-workout recovery.

As an individual, it is important to experiment with this recommendation. Try different fluids, with varying (although very small) amounts of protein powder. This solution needs to be tasty, first and foremost.

Fluid replacement becomes an issue roughly 30 to 40 minutes into a workout. If your workouts are less than this, these recommendations are not a concern. If you go longer, consider bringing a carbohydrate-protein solution along.

*This is a change in previous advice. The addition of proteins during exercise has long been considered inconsequential, and even detrimental. Newer evidence is showing that protein ingestion during exercise has its benefits.

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