

# ***Shaklee -- at the Cutting Edge of Sports Nutrition***

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We all know that success in sports comes from training, training, and more training. But with many athletes training hard for each contest, what gives the top athletes their winning edge? The answer for many athletes is sports nutrition. And today there is one company that has become synonymous with sports nutrition in this country.

## **SHAKLEE IS YOUR SPORTS NUTRITION LEADER**

Shaklee has been a leader in the field of nutritional supplements for over 30 years. Shaklee is the company that designed the sports nutrition program for the 1984 US Olympic Ski Team - the team that won more gold and silver medals than any US team in history at Sarajevo. They designed the nutrition program for the first American expedition to scale Mt. Everest without loss of lean muscle mass. They designed the nutrition programs for the Voyager flight around the world, for the human powered Daedalus flight across the Aegean Sea, and for the Steiger dog sled expeditions to the North Pole and across Antarctica. And they have used their experience to design sports nutrition products which lead the field. Let's look at the roles that sports nutrition can play in athletic performance and the products Shaklee has designed to fill these roles.

## **THE IMPORTANCE OF FLUID AND CARBOHYDRATE REPLACEMENT**

Dehydration is the number 1 problem in vigorous exercise and endurance activities. Water loss can be extremely rapid. You can lose 6 cups of body fluid in just 20 to 25 minutes of exercise.<sup>1</sup> That's already enough to significantly affect performance. Further water loss could lead to muscle cramps, heat exhaustion, and even death.<sup>2</sup> Of course, by fluid I mean water. And if water is the only fluid you need, what role do the fluid replacement products on the market play in hydration? Of course, sports drinks replace the electrolytes lost through exercise. More importantly, they help balance thirst levels with actual fluid needs. Thirst, it turns out, is not a good indicator of fluid needs. Because water tends to dilute the electrolytes in your blood, it shuts off your thirst long before rehydration is complete. Sports drinks, because they also contain electrolytes, don't shut down your thirst mechanism prematurely. Consequently, athletes using sports drinks generally maintain a much better fluid balance than those using water alone.<sup>3</sup>

Finally, sports drinks help maintain the carbohydrate levels needed for maximal energy output. Almost any endurance athlete knows what "bonking" or "hitting the wall" means. Literally it means that you've reached the point of exhaustion. You simply can't go on. That happens whenever your carbohydrate reserves (glucose in the blood and glycogen in the muscles and the liver) are exhausted. Carbohydrate is more efficiently utilized than either fat or protein.<sup>4-6</sup> Thus, once your carbohydrate reserves start to become depleted, you cannot maintain maximal energy output. This can occur in as little as 75 minutes of vigorous exercise.<sup>7,8</sup>

Fortunately, it is possible to increase your glycogen stores with high carbohydrate diets, and clinical studies have shown that when glycogen reserves are increased, endurance improves.<sup>9,10</sup> However, many athletes find it difficult to keep their carbohydrate intake at the recommended 60-70% of total calories. This is why most fluid replacement formulations contain carbohydrate. Their use before and after vigorous exercise can help boost carbohydrate loading while replacing fluids and electrolytes, and their use during the event helps to prevent the depletion of vital glycogen stores. Properly used, they can increase endurance and improve recovery time for athletes who exercise frequently.<sup>12</sup>

However, the exact formulation of carbohydrates in these fluid replacement products is extremely important. Obviously, to boost the percentage carbohydrate intake and to maximize glycogen stores, the higher the carbohydrate content, the better. However, if levels of simple sugars are too high, water can't get from the stomach to the blood as efficiently.<sup>13</sup> In fact, poorly designed sports drinks can even draw water from the bloodstream into the stomach, worsening dehydration and causing cramping, nausea and diarrhea.

### **SHAKLEE PERFORMANCE -- FOR FLUID, ELECTROLYTE AND CARBOHYDRATE REPLACEMENT.**

In designing a fluid replacement drink for the Daedalus flight, Shaklee faced a unique challenge. The flight plan required the cyclist to pedal at near maximal output for 6 hours, 3 times longer than the average marathon. Not only did they need to replace fluids and electrolytes, but they also needed to keep carbohydrate stores at optimal levels during one of the most grueling endurance events ever designed. No sports drink on the market provided enough carbohydrate for this type of event.

Shaklee accomplished that feat by designing a unique carbohydrate formulation called "OptiCarb". OptiCarb is a mixture of simple carbohydrates for quick energy utilization, and complex carbohydrates to replenish carbohydrate stores. It allowed them to achieve higher carbohydrate levels than any of their competitors for maximal endurance, but to maintain osmolality in the ideal range for optimal fluid intake. A comparison with competing products makes this point more clearly:

<i>Product</i>	<i>Total Carbohydrate</i>	<i>Simple Sugars</i>	<i>Complex Carbohydrates</i>	<i>Artificial Ingredients</i>
Breakthrough	10g	Yes	Yes	No
Exceed	17g	Yes	Yes	Yes
Gatorade	15g	Yes	No	Yes
Hydroload	12g	Yes	Yes	Yes
<b>PERFORMANCE</b>	<b>25g</b>	<b>Yes</b>	<b>Yes</b>	<b>No</b>
Twinsport	6g	Yes	Yes	Yes

Shaklee *PERFORMANCE* provides 67% more muscle fuel than Gatorade and 47% more than Exceed. It also has a better balance of electrolyte levels than several of its competitors. Finally, Shaklee *PERFORMANCE* has been proven in clinical studies. Shaklee asked highly conditioned cyclists to ride stationary bikes at near-maximum output (70% V<sub>O2</sub> max) for up to three hours using either Shaklee *PERFORMANCE* or water for fluid replacement. The cyclists who rehydrated on water alone had steadily declining blood glucose levels, while those using Shaklee *PERFORMANCE* were able to maintain constant levels. At the end of 2 hours, the cyclist using *PERFORMANCE* had 37% higher blood glucose levels than the water drinkers. They were also better able to balance thirst levels with actual fluid needs. The cyclists using *PERFORMANCE* only lost 1.5% of their body weight following 3 hours of exercise, while the cyclists using water alone lost significantly more fluid.

How can *PERFORMANCE* be best incorporated into your sports nutrition program?

- 1 Use it instead of soft drinks or fruit juices during the day to help reach recommended levels of carbohydrate intake (60-70% of calories).
- 2 Use it before and during the event to maintain adequate fluid and carbohydrate levels. This is where *PERFORMANCE* really shines. With the osmolality needed for optimal fluid utilization and the carbohydrate level needed for optimal energy output, it clearly leads the field.
- 3 Use it after exercise for fluid replacement. Remember that even with a product such as *PERFORMANCE*, thirst is not a completely reliable indicator of fluid needs.

## MAXIMIZING LEAN MUSCLE MASS

This is the most recent and exciting area of sports nutrition. When you think about it, why do people exercise? Young athletes exercise to gain strength and weight. Established athletes exercise to maximize their lean muscle mass and their performance. The rest of us exercise to redistribute body mass, converting fat to lean muscle mass. Vigorous exercise programs are, of course, the only effective way to accomplish these goals. But these training programs have always had two drawbacks:

- 1 They are slow. In the absence of optimal sports nutritional programs, the desired strength and performance gains often take months or years.
- 2 They are painful. Training can be seriously impeded by slow recovery times. Sore muscles, muscle cramps and depleted energy stores can make it difficult to stick to an optimum training schedule.

How can you minimize these problems and maximize your training results? It turns out that both the timing and amount of protein and carbohydrate in the diet are crucial. During exercise your body is breaking down carbohydrate and protein (muscle) stores to fuel your exercise.<sup>14,15</sup> Muscle fibers are also frayed and torn by vigorous exercise. Immediately following exercise, your body shifts to a rebuilding or anabolic state lasting 4-6 hours. During this time, the body is maximally poised to utilize dietary carbohydrate for replenishing glycogen stores<sup>12</sup> and dietary protein for rebuilding muscle.<sup>14</sup> It is during this anabolic state that the repairing of torn muscle filaments and the replenishment of glycogen stores is most rapid. These are the parameters that are important for rapid and effective recovery from exercise. It is also during this period that much of the muscle building and, consequently, the increase in lean muscle mass occurs.

There are two very different ways to maximize the increase in muscle mass and speed recovery. The first is to increase the duration of the anabolic state through the use of

steroids. This is both illegal and dangerous. The second method is to increase carbohydrate and protein intake during the naturally occurring anabolic phase. This is the basis for several of the body building products in the marketplace. However, simply providing those nutrients is only part of the story. Maximizing the utilization of those nutrients is equally important and represents the cutting edge of sports nutrition research.

Optimizing the utilization of this carbohydrate and protein requires maximizing insulin levels. Insulin stimulates the utilization of glucose to replenish glycogen stores, and the utilization of amino acids to repair muscle fibers and increase lean muscle mass. Both carbohydrate and protein alone increase insulin levels. However, Shaklee has shown that carbohydrate plus protein produce higher insulin levels than either one of them alone.<sup>16,17</sup> Furthermore, they found that the insulin level achieved depended both on the amount of carbohydrate and the ratio of carbohydrate to protein consumed. Their latest research has defined the optimal levels of carbohydrate and the optimal balance between the carbohydrate and protein to maximize insulin levels. They call this formulation "Bio-Build" and have incorporated into their *PHYSIQUE* sports drink. The concepts behind this product are so unique and the research is so recent, that there are truly few competitive products on the market. The few that do exist, appear to be too low in carbohydrate - or too low in protein - for optimum results.

<i>Product</i>	<i>Carbohydrate</i>	<i>Protein</i>	<i>Fat</i>
<b><i>PHYSIQUE</i></b>	<b>57g</b>	<b>21g</b>	<b>&lt; 1g</b>
Welder Crash Weight Gain	61g	6g	2g
Mega Pro Muscle Plus	15g	22g	--
Victory Anabolic Mass	41g	18g	1g
Champion Metabolol II	40g	20g	2g
KAL Growth Phase	7g	54g	6g

Shaklee *PHYSIQUE* also provides balanced amounts of 11 essential vitamins and 11 essential minerals (including iron, chromium, zinc, riboflavin, vitamin B<sub>6</sub> and vitamin C). Thus, it can help meet the increased nutritional needs of athletes without any danger of micronutrient excess. Thus, for the first time, there appears to be a product which is scientifically designed to provide a safe and effective alternative to steroids.

How can Shaklee *PHYSIQUE* fit into your training program?

**1 Weight Gain.** One of the biggest concerns of many young athletes is to increase their lean muscle mass. It's often extremely difficult for the average teenager to attain the optimal weight and strength for many sports. This product would be ideal for that purpose. Shaklee recommends 1 serving immediately after the workout, 1 serving 2 hours later, and 1 serving just before bedtime.

**2 Sports Training.** For many sports, a rigorous training program is necessary to minimize body fat and maximize muscle tone. Shaklee recommends 1 serving after the workout and 1 serving 2 hours later. A secondary benefit of this nutrition program is that it is likely to quicken recovery time, allowing better adherence to the training program.

**3 Body Building.** *PHYSIQUE* can provide a safe alternative to steroids. Shaklee recommends 1 serving after each workout, 1 serving 2 hours later, and 1 serving 3 or 4 hours later.

**4 Those Exercising to Decrease Body Fat.** Millions of Americans fit in this category. Bitter experience has shown us that food restriction alone is often not enough to give us the weight loss and body shape we are looking for. For this purpose, Shaklee recommends 1 serving of *PHYSIQUE* following each workout.

**5 Weekend Warriors and Occasional Athletes.** Here the main benefit of Shaklee *PHYSIQUE* will be improved recovery. It's not a miracle balm for long unused muscle, but anything that helps reduce those aches and muscle cramps would be helpful. Shaklee's clinical studies have shown that *PHYSIQUE* often does just that. Shaklee recommends 1 serving shortly after exercise.

### **INSTANT PROTEIN - AN IDEAL LOW FAT PROTEIN SOURCE**

The average adult needs just under 0.4 grams of protein per pound of body weight.<sup>14</sup> However, serious athletes may need a gram or more of protein for every pound of body weight.<sup>11, 14, 19</sup> This includes endurance athletes, athletes in heavy physical training, weight lifters and body builders, and young athletes with protein needs for both growth and muscle building. These athletes need to be very careful about their food choices, especially if they are also trying to maximize carbohydrate and minimize fat in their diet. Most of the familiar high protein sources in the American diet are high in fat and/or low in carbohydrate. Thus, there may be some advantage to the protein supplements used by many athletes. Protein supplements can help the serious athlete meet their protein requirements while keeping their fat intake desirably low.

However, as with fluid replacement products, not all protein supplements are equally good. The best of them have PER values (a measure of how well they are utilized by your body) of 2.5 or greater, and have 1 gram of fat or less/serving. Natural sources of protein are best. Individual or "added" amino acids are often incomplete and can have undesirable pharmacological effects in large doses. "Predigested" amino acids are more costly and unnecessary. Finally, it is best to choose a product backed by clinical studies. An FDA study has shown that many popular protein supplements are, in fact, poorly utilized by the body.<sup>20</sup> Shaklee's *INSTANT PROTEIN* is an ideal protein supplement for athletes. It is a low fat soy protein supplement of high biological value. In fact, the FDA studies showed that it is more efficiently utilized than its competitors.<sup>20</sup> *INSTANT PROTEIN* is most often used between workouts and on days between workouts.

### **OTHER NUTRITIONAL SUPPLEMENTS**

With a good diet plus Shaklee *PHYSIQUE* and Shaklee *PERFORMANCE*, many athletes will need little, if any, additional supplements. However, where the diet is not optimal, a good multivitamin/multimineral supplement can provide nutritional insurance. I recommend Shaklee's *VITA LEA* because of its balanced formulation, the fact that it is one of only a very few supplements to provide adequate calcium levels, and the fact that clinical studies have shown that its nutrients are optimally utilized by the body.

Female athletes in particular may have a problem maintaining optimal iron levels. If so, I would recommend Shaklee's *IRON PLUS VITAMIN C* because it is formulated for optimal iron absorption. Most female athletes should be able to get enough calcium from their diet along with Shaklee *VITA LEA* and Shaklee *PHYSIQUE*. However, if they are not consuming milk and other dairy products, or if they are amenorrheic, they may wish to consider supplementation with Shaklee's *CALCIUM COMPLEX*.

Supplementation with individual B vitamins should be avoided, because they can actually interfere with performance.<sup>21</sup> If the athlete or trainer wishes additional supplementation with B vitamins, a balanced B complex would be a better choice. Supplement with vitamins C, E and beta-carotene has not been shown to affect performance. However, these important antioxidant nutrients do appear to be important to our overall health, and the needs for these nutrients do seem to be increased by exercise.

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