The Science Behind Golf Fuel  
By  
Thomas Incledon, PhD, RD, LD/N, NSCA-CPT, CSCS

Making a supplement that works is no easy task. You have to combine the right ingredients, at the right dosages, test it, review the results, make changes, test it again, and the process continues until you get the results that are satisfactory. Designing a formula to enhance golf performance is even more of a challenge. You want to improve coordination and balance which involves facilitating signals in the nervous system, but at the same time you don’t want to overstimulate the nervous and make someone’s hands shake. If that happens, say “so long” to your driving accuracy and you can kiss your short game good bye. What we attempted to do with Gold Fuel, is make a product that as people take it, their golf game improves with no side effects. The available evidence that I have been able to review so far actually indicates that the longer you take this formula the better your results will be. In the sections that follow I will overview each ingredient and share how I think it can help contribute to improving your golf performance.

Acetyl-L-Carnitine (ALC)
Acetyl-L-carnitine is an amino acid. It is the most important ester of L-carnitine found in animals [1]. ALC is one of my favorite supplements. The reason for this is simple: It can be converted into a variety of neurotransmitters [2-4]. This gives multiple opportunities for a single supplement to benefit human health. While most studies have been done on isolated cells and animals don’t get discouraged, after all it’s hard to find subjects willing to let their brains get sliced up or have their muscles removed so that scientists can study their mitochondria. ALC can be converted into acetylcholine [2]. This can benefit your body in numerous ways. Acetylcholine is an essential neurotransmitter in the central nervous system as it has an effect on alertness, memory and learning [5]. This provides potential for ALC to do the same in humans. So far there is little evidence that ALC by itself can increase alertness in humans. However when ALC is combined with other supplements it does increase alertness in humans [6]. ALC has also been shown to improve memory [2, 7-13] and learning [2, 8, 14]. This leaves potential for ALC to help improve golf performance by increasing neurotransmitters that are important to learning, memory and alertness.

Figure 1: Acetyl-L-Carnitine (ALC)
In addition, ALC can benefit the nervous system by increasing nerve growth factor, improving the healing of damaged nerves, and reducing nerve pain after injury [15-18]. ALC also improves the neuromuscular junction in skeletal muscle, preventing some of the effects of ageing and injury [19]. Maybe even more impressive is that ALC can regenerate damaged neurons [18]. Your brain sends signals to your muscles to control your movement. These signals can be improved by ALC. That means learning a skill and coordination can be improved. Research has also shown that ALC can improve learning and reaction time to mental and visual stimuli [20]. During my experiences working with elite track and field athletes and world class powerlifters, I found ALC was useful in enhancing skill acquisition and increasing power. At first glance you might wonder how ALC could benefit golf athletes? The answer is simple: Golf swing. The optimal golf swing depends on well balanced blend of appropriate power and control. The appropriate level of power gets you the distance you are looking for, whether it is close distance for your short game or long distance for your driving. The control determines the accuracy you need to get to the hole. ALC can increase help improve power and control, making it a very useful in your supplement arsenal.

ALC has been shown to increase IGF-1 [21] and LH [22] in people and testosterone in rats [23]. This means that ALC has the potential to positively affect anabolic hormones that can add muscle, lose fat and enhance recovery from exercise. Stronger, well rested muscles means you can make consistent improvements in training which leads to improved performance on the course.
Bacopa

Bacopa monniera Linn is also known as Brahmi in Ayurvedic literature. In the ancient Indian system of medicine, Ayurveda, Bacopa monniera is classified as Medhya rasayana, which includes medicinal plants that rejuvenate intellect and memory [24]. It’s been used in India for over 3000 years. The herb contains components called saponins that can be further divided into additional components called bacosides, bacopasides and bacosaponins [25]. Bacopa has received a lot of attention for its research on enhancing memory [26]. Research has shown that not only can it improve memory, it can also increase reaction time and learning [26]. While the mechanisms of how Bacopa can work are not entirely understood, treatment significantly enhances the learning and retention of memory in rats possibly through regulating the expression of Tryptophan hydroxylase 2 (TPH2), Serotonin (5-HT) metabolism and transport [27]. In Figure 3: Serotonin Synthesis, Tryptophan is converted into 5-Hydroxy-L-tryptophan by the enzyme Tryptophan hydroxylase. The enzyme has two different forms or isomers: Tryptophan hydroxylase 1 (TPH1) and Tryptophan hydroxylase 2 (TPH2). TPH1 is found in cells in the skin, gut, pineal gland and central nervous system that synthesize serotonin (a neurotransmitter). TPH2 is exclusively expressed in neuronal cell types and is the predominant isoform in the central nervous system. 5-Hydroxy-L-Tryptophan is in turn converted into Serotonin by an enzyme 5-Hydroxytryptophan decarboxylase. Serotonin in turn is converted into 5-Hydroxyindoleacetic acid (5HIAA) by the enzyme Monamine oxidase (MAO). Bacopa has constituents that can increase the production of serotonin by increasing the enzyme TPH2.
Other noteworthy benefits of Bacopa is that it can stimulate the growth of neurons [24], reduce anxiety [28], reduce effects of acute and chronic stress [29] and it can enhance immune function [30]. These benefits can impact golf performance by making it easier to improve your skill, enhancing your ability to handle the pressure of playing golf, and reducing the incidence of getting sick while traveling on the road.
DMAE 300 mg

Ginkgo Biloba 24%/6% 60 mg
Ginkosides

Green Tea 45% EGCG 250 mg

Huperzine A 200 mcg

N-acetyl-tyrosine 200 mg
Phosphatidylserine 200 mg

Rhodiola Rosea SHR-5  200 mg

Sulbutiamine  75 mg

References


