

ORIGINAL ARTICLE

# NUTRITIONAL ERGOGENICS AND THE NUTRIGENOME IN SPEED-STRENGTH SPORTS

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## *Abstract*

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**Background:** Ergogenics is any pharmacological, nutritional, mechanical, or psychological aid that can help improve athletic performance. The use of specific nutrients from the diet and dietary supplements were recently discovered to have an influence on genes, including genes important in athletic performance. This research is ongoing but it is now well accepted that nutrition can have a measured effect on certain genes which play a role in athletic success, genes which include those for endurance as well as speed-strength traits. Speed-strength athletes now have the potential to acquire gene and gene variance amplification by consuming certain nutrients which influence muscle mass, strength, and power genes to further boost sport specific performance.

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Ergogenics is any pharmacological, nutritional, mechanical, or psychological aid that can help improve athletic performance. Pure speed-strength sports such as track and field sprinters, throwers, and jumpers, Olympic weightlifters, powerlifters, football players, gymnastics, mixed martial arts fighters, and the like demand rapid and synchronized muscle fiber recruitment and power in short competitive windows to compete at the highest level. These athletes generally have a high percentage of fast twitch muscle fibers as well as certain gene variances which position them better for explosive force. Speed-strength-endurance athletes like those in many team sports including basketball, soccer, hockey, rugby and the like perform in short bursts as well as longer more endurance oriented movements and often have a mixed percentage of both fast and slow twitch fibers as well as gene variances more balanced between speed-strength and endurance actions.

Sport nutrition over the past several decades has been crude and broad in focus. This is about to change. The reason for a change is that once the human genome (all our human genes or DNA) was mapped, scientists were

able to more closely determine which genes were most key toward building elite speed-strength athletes. And once researchers discovered some unique performance gene variances (known as polymorphisms, single nucleotide polymorphisms, or SNPs) they were also able to begin the process of discovering how to manipulate these genes via epigenetic means, and in particular nutrigenomics which is the influence of food derived nutrients on the epigenome (your genes or DNA). What this means is that you are not simply who you are because of the genes you were born with. You are on the road to becoming a better athlete because you have the potential to manipulate your genes through the introduction of more targeted nutrients that are capable of switching on, or off, specific genes.

In just the past few years scientists have begun to discover how important the diet and the specific nutrients in the diet are in molding an elite athlete. This process actually begins in the womb during a process called fetal programming. You are who you are today thanks not only to the DNA from your father and mother, but also what your mother exposed you to (such as

exercise, her diet, and her lifestyle) while you were in her womb- as well as your early years of life as an infant when genes are quite malleable. These early times helped to “program” your genes to be more endurance focused, more power focused, or a combination. So nutrition plays a role right from conception. If you’re an explosive and powerful athlete you can thank your parents for a little bit of them as well as how you were raised, because they both play a key role in who you are.

Now fast forward to today. You’re older, with likely a few years of training under your belt. Think your genes are set- no change possible? Think again. This is where nutrigenomics plays a role. This is where you can manipulate your genes via nutrition to turn on those genes and gene pathways that boost your power so you can elevate your game. Scientists now know that how nutrition and certain dietary supplements work is by improving performance at the gene level. You have sport performance genes and also gene variances or SNPs which can be dialed up or turned down depending on the nutrients you consume.

Sounds like science fiction doesn’t it? Well, just ten years ago it was. Now nutrigenomics is a major focus of many international sport scientists, coaches, and sport governing bodies. The best is yet to come.

Nutromic Sports Nutrition operates differently than other sport nutrition entities. We are research driven scientists and coaches first, marketing wizards way last. We have access to new sport technologies 2-4 years ahead of others thanks to the international contacts we’ve made over the years. Much of our ongoing research originates from research being conducted by international laboratories including but not limited to those in Russia, Germany, Italy, Japan, Australia, and even China. This global effort is ahead of research being conducted in the

United States, although we anticipate more nutrigenomic research in the USA within the next few years.

Our main focus is genes and gene variances essential for elite success in speed-strength sports. We are not so interested in endurance related genes and gene variances. Our research and the nutritional we provide speed-strength athletes are focused on amplification for those gene pathways involved more so in muscle mass, reaction, starting-power, speed, and fine motor skills during speed movements. Most of our research is directed toward gene SNPs and how nutrients influence those SNP’s.

The creation of nutritional which can enhance power athlete genes originates in the laboratory plus pilot process, and follows through to well-trained and elite athlete testing under “real-world” training programs. This is where Nutromic sport supplements differ from many other nutritional. The supplements we create are more targeted and results are more measurable as we’ve fine-tuned the formulas over time. In the case of MYOSYNC™ which is designed as a pre-power workout or competition nutritional, this process took us nine years.

The future of sport performance nutrition will not be doing the same old thing nutritionally over and over. It will not be whey protein and creatine, stimulants, “testosterone boosters” and pre-workout energizers. It will instead be nutrients which, when used in synergy and in the right dose, specifically target certain genes involved in maximizing the success of well-trained and elite speed-strength athletes. This will be targeted gene driven nutrigenomics as ergogenics for the building of speed-strength traits.

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