

Nutritional Genomics Profile Based Personalized Sport Nutrition

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Abstract : Our genetic information determines our look, physiology, sports performance and all our features. Maximizing the performances of athletes have adopted a science-based approach to the nutritional support. Nowadays genetics studies have blended with nutritional sciences, and a dynamically evolving, new research field have appeared. Nutritional genomics is needed to be used by nutritional experts. This is a recent field of nutritional science, which can provide a solution to reach the best sport performance using correlations between the athlete's genome, nutrients, molecules, included human microbiome (links between food, microbiome and epigenetics), nutrigenomics and nutrigenetics. Nutritional genomics has a tremendous potential to change the future of dietary guidelines and personal recommendations. Experts need to use new technology to get information about the athletes, like nutritional genomics profile (included the determination of the oral and gut microbiome and DNA coded reaction for food components), which can modify the preparation term and sports performance. The influence of nutrients on the genes expression is called Nutrigenomics. The heterogeneous response of gene variants to nutrients, dietary components is called Nutrigenetics. The human microbiome plays a critical role in the state of health and well-being, and there are more links between food or nutrition and the human microbiome composition, which can develop diseases and epigenetic changes as well. A nutritional genomics-based profile of athletes can be the best technic for a dietitian to make a unique sports nutrition diet plan. Using functional food and the right food components can be effected on health state, thus sports performance. Scientists need to determine the best response, due to the effect of nutrients on health, through altering genome promote metabolites and result changes in physiology. Nutritional biochemistry explains why polymorphisms in genes for the absorption, circulation, or metabolism of essential nutrients (such as n-3 polyunsaturated fatty acids or epigallocatechin-3-gallate), would affect the efficacy of that nutrient. Controlled nutritional deficiencies and failures, prevented the change of health state or a newly discovered food intolerance are observed by a proper medical team, can support better sports performance. It is important that the dietetics profession informed on gene-diet interactions, that may be leading to optimal health, reduced risk of injury or disease. A special medical application for documentation and monitoring of data of health state and risk factors can uphold and warn the medical team for an early action and help to be able to do a proper health service in time. This model can set up a personalized nutrition advice from the status control, through the recovery, to the monitoring. But more studies are needed to understand the mechanisms and to be able to change the composition of the microbiome, environmental and genetic risk factors in cases of athletes.

Keywords : gene-diet interaction, multidisciplinary team, microbiome, diet plan

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