Commentary on Viewpoint: Perspective on the future use of genomics in exercise prescription

John A. Hawley
School of Medical Sciences, RMIT University, Bundoora, Victoria, Australia

TO THE EDITOR: Genomic factors are unquestionably important in determining the magnitude and responsiveness of individual adaptation to an exercise stimulus (2). But the application of genomic information to improve and individualize exercise prescription (5) seems an unlikely scenario for several reasons. First, physical activity is a potent means of reducing a wide-range of health risks in all phenotypes. Accordingly, the benefit of individualized exercise prescription based on genomic profiling in preference to population-wide guidelines is questionable. Second, genetic (risk) knowledge rarely motivates behavioral change (3). Most chronic diseases have a proven association with physical inactivity (1) yet the overwhelming majority of individuals chose to remain inactive. Third, for some individuals, knowledge that their genomic profile was consistent with a negative or adverse response to an exercise intervention may lead to fatalism and a reduced compliance with this and other health choices (4). Fourth, while mutations that cause genetic disease result in clinically significant loss of function or even death, genetic exercise variants are not life threatening. Indeed, chronic inactivity-related disorders are polygenic and highly dependent on the environment (i.e., existing genes interact with environmental factors to result in phenotypic expression of these diseases). Finally, and of practical significance, genetic information is only useful if it informs more effective intervention strategies than possible in its absence. At present, formal exercise prescription for most individuals is based on a personal relationship with a fitness trainer or coach and is empirically, rather than technology based. This cost-effective strategy is likely to continue into the foreseeable future.

REFERENCES