

IEEE Event:

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Paper Title:

Performance-Enhancing Biomechatronics: A Competitive Advantage?

Abstract:

Biomechatronics is the engineering integration of electronic control and mechanical actuation into biological organisms. Athletes, warfighters, and other competitors are finding competitive advantages when using biomechatronic prostheses as performance-enhancing aids. Recent sports controversies highlight the ethical issues of using high-performance biomechatronic prostheses in competitions. As biomechatronic technology advances, prosthetic performance will exceed that of the natural body. The ethical impacts of these technologies affect sport, society, and morality. Restrictions of biomechatronic performance must be applied to maintain fair competition. This paper describes the operation of biomechatronic prostheses, surveys the current state of prosthetic performance; forecasts future trends and capabilities; and explores the ethical issues that arise as these technologies improve. Performance-enhancing bionics is the future competitive advantage.



Author Bio:

Vince Socci is President of the Platform Division of LHP Engineering Solutions. He leads a team that provides tools and services to accelerate the development of model-based embedded controls for the automotive industry. With over 25 years of experience in aerospace, automotive, power electronics, and medical systems, he has engineering systems in the most complex applications. His specialized areas of interest are embedded controls, model-based-systems, and systems engineering. He holds a BS in electrical engineering, MS in electrical engineering and MBA in technology management. Socci has served on the IEEE Board of Directors, and governing boards of several IEEE societies, SAE, and PMI. He is a certified PMP.