SUCCESS in sport and the facilitation of active, health lifestyles through exercise is in large part influenced by technical advances in equipment including ergonomic designs, the incorporation of new synthetic polymer materials or metal alloys, and/or the utilization of novel manufacturing and construction processes. Any or all of these changes to the product may have a profound effect on performance and safety. A recent example is seen in the technical revolution of the speed "klap" skate that has led to new world and Olympic records. Typical of most sports, ice hockey equipment has evolved more by trial-and-error field-testing rather than from planned scientific or engineering analysis. However, the planned study of the ergonomic factors improving (and impairing) performance can accelerate new product development by providing feedback to engineers regarding perceptions and quantitative measures of performance to specific components of the product. Controlled studies provide a framework for systematic evaluation of products as well as to provide validation (or rejection) of mechanical theories regarding function.

Despite past and current research efforts, much remains unknown about the physics of tasks involved in ice hockey or even the fundamental behavior of gliding on ice. Research addressing the effect of design and construction on ice hockey performance has been sporadic and of indirect application to manufacturers, coaches, and athletes. Hence, continued efforts are needed to dissect the mechanical function of the ice hockey skate.
EMG) of the major lower limb muscle groups using surface bipolar electrodes with preamplification connected to a portable amplifier and data logger 6.

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