Jos J. de Koning, PhD, FACSM is an associate professor of human movement sciences at the Vrije Universiteit Amsterdam. He is awarded this ACSM Citation Award on the basis of his unique contributions of applying concepts of the basic science Energy Flow Model to elite sport and fundamentally contributing to improvement in athletic performance.

Most sport scientists make small, incremental contributions to sport, explaining why or how something that coaches and athletes already know to be beneficial works. Rarely are they the instigators of technical or equipment changes that have large near-term effects on performance. Jos has made innovations that, at least twice, have resulted in such improvement. Before Jos's work, other innovations of this magnitude were the introduction of the fiberglass vaulting pole in 1964 and the Fosbury Flop in high jumping in 1968, neither of which were primarily from sports scientists.

Because of the characteristics of the speedskating boot-blade system, plantar flexion of the ankle joint must be suppressed, which leads to losses in power production. This also causes reductions in power production related to knee extension. These power losses lead, in turn, to reductions in speed. Beginning with basic conceptual ideas, through controlled experimentation in sub-elite athletes to eventual adoption by elite athletes, Jos, working under Gerrit Jan van Ingen Schenau at the Vrije Universiteit Amsterdam, implemented a hinged skating blade, the klapskate, which allowed full power production from ankle plantar flexion and knee extension, with resulting increases in speed. This led to every Olympic medal being won, and every world record being improved, within a year of full adoption of the klapskate in 1997.

Similarly, power losses attributable to air friction are important in speedskating and can be accounted for with the Energy Flow Model. Beginning with the first modifications of skating suit texture in 1998, Jos and colleagues realized that suit modifications were not unitary but, rather, needed to be adjusted for the size and speed of the individual skater. By the 2014 Olympics in Sochi, this led the always successful Dutch skaters to achieve such large successes that the International Skating Union changed participation eligibility in a way intended to reduce the number of Dutch competitors, simply out of fairness to skaters from other countries.

Thus, for his translation of fundamental science concepts of human propulsion into equipment concepts in a way that resulted in substantial and rapid improvements in performance, Jos de Koning is awarded this ACSM Citation Award.

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