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During the optimisations the joint angle time histories of the model were manipulated in order maximise the angular momentum about the model's mass centre at release. To avoid joint angle time histories which exceeded the strength capabilities of the gymnast, the surface fits which expressed torque as a function of angle and angular velocity were used to limit the joint torques at the hip and shoulder (King and Yeadon, 2002) . Two optima were found which were characteristic of the two backward giant circle techniques used by elite gymnasts. The traditional technique produced more angular momentum than the scooped technique although both techniques were capable of producing sufficient angular momentum for a double layout somersault dismount. As a consequence the preference of elite gymnasts for the scooped technique must be based on factors other than the production of angular momentum.

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Hiley, M.J. and Yeadon, M.R. 2003. The margin for error when releasing the high bar for dismounts. Journal of Biomechanics 36, 313-319.

Kerwin, D.G., Yeadon, M.R. and Lee, S. 1990. Body configuration in multiple somersault high bar dismounts. International Journal of Sport Biomechanics 6, 2, 147-156.

King, M.A. and Yeadon, M.R. 2002. Determining subject specific torque parameters for use in a torque driven simulation model of dynamic jumping. Journal of Applied Biomechanics 18, 207-217.