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Characteristics of Muscle of Muscular Torque on Lower Limb Muscle Groups in Men's Sprinters

By *Masayuki Matsuda**
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The purpose of this study was to investigate the relationship between sprint performance and lower limb muscular torque of men's college and high school sprinters. The results were as follows.

- 1) Peak torque at Quadriceps femoris muscle (Quad) decreased with increase in the angular velocity during concentric contraction.
- 2) Peak torque at Hamstrings (Hamst) was lower than Quad during concentric and eccentric contraction. However, the decrement of peak torque at Hamst was smaller than Quad. Especially, in college sprinters, those values at Hamst and Quad were almost the same under the angular velocity condition of 240 deg/sec during concentric contraction.
- 3) The eccentric(E)/concentric(C) ratio in each muscle group increased with increase in angular velocity. Also, the E/C ratio of college sprinters had a tendency to be higher than that of high school sprinters at Quad and Hamst.
- 4) There was no correlation between the record of 100m sprints and the muscular torque in each muscle group in college sprinters. However, it had a tendency that the sprinters who had the better records showed the higher values of muscle torque at Quad in a high angular velocity during concentric contraction. There was a correlation between the record of 100m sprint and the muscular torque at Hamst in high school sprinters.
- 5) College sprinters showed a higher value of muscle torque at Hamst than that of high school sprinters during eccentric contraction.

Those results suggested that the sprint performance did not due to only muscle strength but also the running technique.

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