Connection between Heel Motion and Torque in crank revolution

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Introduction : Background Pedaling torque analyzer for bicycles







Introduction: Pedaling Power





Pedaling motion is different

Introduction: Purpose



Purpose

To analyze how pedaling motion affect torque pattern

Methods: measuring system





Pioneer Pedaling Monitor System

Pedaling Monitor can measure each torque in twelve zones

Methods: measuring system



Analyze heel motion in each zone from high speed movie

Methods: procedure & statistical analysis

- Load power: around 200W
- Cadence lower than 90rpm
- Record 20 sec pedaling monitor and video with same motion
- Record one side
- Measure torque by pedaling monitor
- Measure how change heel angle (heel motion)
- Average torque of each zone and heel angle





Pedaling zone













Training: Squat Pattern



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Training: Change Squat Pattern



Results: Heel Motion



Conclusion

- Heel motions affect torque variation in crank revolution.
- Particular movement type of each cyclist's whole body seems to affect heel motion.

Future:

- Reveal particular movement type and heel motion
- Clear what heel motion cause better torque

Thank you



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