



A biomechanical analysis of judgment in race walking events at world major competitions from 2004 to 2007

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Rule 230.1 (Definition of Race Walking)

“A progression of steps so taken that the walker makes contact with the ground, so that no visible (to the human eye) loss of contact occurs.”



“The advancing leg shall be straightened (i.e. not bent at the knee) from the moment of first contact with the ground until the vertical upright position.”





“Judgment by the human eyes”

-Subjective judgment of each judges (5-8)-

Impartiality for all athletes

Disqualification with over three red cards

Regulated judging manner

Objectivity

No objective methodology of RW judgment

- Necessary to be warranted by objective analysis





ANALYSES

2004Athens: M20kmW

Loss of Contact and Bent Knee

2005Helsinki: M20kmW / W20kmW

Loss of Contact

2007Osaka: M20kmW / W20kmW

Loss of Contact





Conclusion

Loss of Contact

- High heel position just after toe-off or just before heel contact
- High knee position from toe-off to Heel-contact

* Consistent in different competition

Bent Knee

Forward swing of the shank just before heel contact

* Number of DSQs by 'bent knee' is very small

