

# Diagonal technique of cross country skiing on 50km classical race in FIS Nordic World Ski Championships 2007

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## Abstract

This study investigated kinematic changes in the skiing motion of the diagonal stride technique during a world-class 50km classical cross-country skiing competition.

Data were collected from a men's 50 km classical mass start race during the FIS Nordic World Ski Championships 2007 on a 12.5-km circuit course. Skiers were videotaped by cameras (60 Hz) set perpendicular to the uphill section at the 16.8-km and 46.8-km points of the course. Six skiers who were within 20 seconds from the leader at 20-km point and more than 5 minutes behind the leader at the 35-km point were selected as subjects, containing Japanese. The skiing motion of six the subjects at the 16.8-km and 46.8-km points were compared.

In an analysis with paired t-tests, the skiing speed ( $t = 5.56$ ,  $p < 0.05$ ) and the ski gliding length ( $t = 4.11$ ,  $p < 0.05$ ) at the 16.8-km point were significantly greater than those at the 46.8-km point. The long ski gliding length may result from the high ski gliding speed, which was affected by the high recovering speed in the final part of the ski recovery phase with the high kicking speed of the centre of gravity.

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