論 文 の 欧 文 要 旨

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(Title)

The improvement in the starting motion for male skeleton athletes: Analysis of the starting motion of top athletes and effects of immediate feedback training

(Abstract)

The purposes of this study were to investigate the relationship between the start and goal times, and the step characteristics of the starting motion for international-level male skeleton athletes in official races, and to examine effects of immediate feedback training on the improvement in the starting motion.

The starting motion of twenty-six male athletes were recorded in international official races and analysed by the three-dimensional motion analysis method. The standard motion model of the skeleton starting motion was created from eleven male athletes with the excellent starting time. In the immediate feedback training of an hour, six participants attempted to improve their starting motion referring the standard motion model.

The results obtained could be summarized as follows. 1) There was a clear significant relationship between the start time and the goal time. 2) Step length index showed significant negative correlation with the start time. As the number of steps increased, angular velocities of the swing thigh, kick up angle and the forward motion of the swing leg increased, and the maximum angular velocities of the hip and ankle joints in the support leg also increased. 3) After the immediate feedback training, the step length and the sled speed were significantly increased. The deviation of the hip and shoulder joint angles from the standard motion model decreased in starting technique due to the feedback given.

Pushing the sled strongly after the starting block release and sprinting

with the large step length and high step frequency by a quick thigh swing motion and the extension of the lower limb joints in the support leg would lead to shorter start time. The immediate feedback training using the standard motion model seems to be effective in improving the starting technique as well as the change in athletes' intentions of motion, given critical points in advance.