The characteristics on ERPs of goalkeepers during judging the kicked ball direction in penalty kick

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Purpose: The aim of this study was to investigate the characteristics of ERPs, the amplitude and the latency of goalkeepers compared with that of non-athletes.

Methods: The subjects were 20 males (10 goalkeepers and 10 non-athletes). They performed S1-S2 paradigm that consisted of 2 tasks (Control, Task). Under the control condition, the subjects were asked to respond when the S2 image was blue, and not to respond to a red S2 image. Under the task condition, the subjects were required to respond when they determined that the PK kicker in the S2 image was going to kick the ball into the right or left corner of the goal, and not to respond to kick the ball into the center of the goal. EEG activity was recorded at Fz, Cz, Pz, C3 and C4. ERP was measured the amplitude and the latency of N200 and P300. EMG-RT and the accuracy of judgment were also calculated.

Results:
1. In the Task condition, the accuracy was significantly higher, with a markedly shortened EMG-RT, in the GK compared to non-athlete group.
2. In the Control-Go and Task-Go conditions, the N200 amplitude was significantly greater in the GK compared to non-athlete group.

Discussion: These results showed, when judging the direction of penalty kick, the EMG-RT was shorter, and the accuracy was higher in the GK group. It suggests that the functions of the frontal lobe and motor area, in the GK group, are promoted by long-term training.

Effect of the rotational speed of the rope in a person turning a long jump rope is on the heart rate and oxygen uptake

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Purpose: The purpose of this study was to clarify the effect of heart rate and oxygen uptake on a person turning a long jump rope at different rotational speeds.

Methods: Subjects were six healthy Japanese males volunteered to participate in this study. The measurement conditions were set for a jump rope at three rotational speed conditions: 70, 90 and 110 rpm. Measurement indexes were heart rate, oxygen uptake, blood pressure and Rating of Perceived Exertion (RPE).

Results: Heart rate during exercise was a significant difference among the three conditions (p < 0.05). Oxygen uptake during exercise was a significant difference among the three conditions (p < 0.05).

Conclusion: Changes in heart rate and oxygen uptake by a person turning a long jump rope were dependent on the rotational speed of the rope.

Key words: a person turning a long jump rope