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Author	近藤, 明彦(Kondo, Akihiko)
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Perceptual-Motor Function and the Effect of Training Experience

By *Akihiko Kondoh**

The purpose of this experiment is to investigate the mechanisms of the so-called agility of the human body. Reaction time is regularly used as the index of the agility. Reaction time of the perceptual-motor function are measured in three groups of the Keio University students.

We measured the total reaction time and analyzed the duration of each segment. We found that there is a clear difference between the subjects of team ball game sports and that of individual sports, such as Track and Field.

Sixtyfour healthy male students, aged 18–23 years, are subjected to this experiment. Subjects are classified into following three groups according to their sports experience: 1. Control group; training inexperienced students, 2. B-group; varsity team members of Keio University Basketball club, 3. T-group; varsity team members of Keio University Track and Field club.

Two types of reaction time are measured. One is the Whole body reaction time (WR). The other is the Selective reaction time (SR). WR is divided into two time phases: 1. Conduction time (Cd), 2. Contraction time (Co). SR is divided into four time phases: 1. Eye reaction time (ER), 2. Eye movement time (EM), 3. Decision time (De), 4. Contraction time (Co).

Following results are obtained from this experiments.

1. Reaction time (WR & SR) of B-group and T-group is shorter than that of the Control. This result suggests the positive effect of training experience.
2. No significant difference is observed between the reaction time (WR & SR) of B-group and T-group.
3. A minor difference is observed in each phase of reaction time of B-group and T-group. Contraction time (Co) of T-group is tend to be shorter than that of Control and B-group. This shortness of peripheral muscular contraction time is depending on the training effects in the Track and Field.

* Assistant of the Institute of Physical Education, Keio University.

4. The decision time (De) of the B-group is tend to be shorter than that of Control and T-group. This shortness of decision time in the central nervous system may come from the daily more complicated training in the Basketball than in the Track and Field.