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## **Automated coaching system using portable sensor : Development of the system for inline-skating**

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This paper proposes an automated coaching system that can analyze kinematics and provide analyzed results. The system has two advantages. One is that the system makes it easier to analyze kinematics than the conventional method of image analysis, because it uses a small portable acceleration and orientation sensor (LPMS-B). The other is that it can work anywhere, even if a coach can not see a player, because it uses a smartphone for coaching. The smartphone uses sound and is connected to the sensor by the analyzing server.

First, we collected and analyzed the inline-skating movement data measured by

LPMS-B. We get some important information for skating: the length of time a stroke, the angle of the upper body, the angle of the upper body direction transition. Furthermore, we recorded that the parameters tend to change by skill or tiredness. Then, we did three experiments to assess the automated coaching system developed by the analyzed result. By comparing a user who had not used the system, the same user who was using the system and the same user who already had used the system, we assessed the system. As a result, we confirm that the system could make user's skating a significant change as it had expected.