STUDY ON SKIING TURN USING PASSIVE SKIING ROBOT FOR IMPROVEMENT OF GAME PERFORMANCE

Norihiko Saga and Naoki Saito

Akita Prefectural University, Yurihonjo City, Japan

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INTRODUCTION: Recent studies on skiing turns have been researched from various viewpoints. And the mechanism of the skiing turn using the skiing robot is clarified now. However, those results are not concretely reflected in alpine skiing. Therefore, to facilitate theoretical consideration, the passive type skiing robot was developed. The influence on the skiing turn such as the position of center-of-gravity and the shape of skiing are examined by using this robot. In this paper, it reports on their experimental results.

METHOD: The robot (Figure 1) consists of the trunk, two legs, the supported bar and ski which are made from ABS resin. The trunk and each leg are combined by the hinge so that it may easily move to right and left. Further, in order to restrict the angle of the hinge, it is connected with both legs with the support bar. Using the skiing robot, we will verify experimentally how much effect is attributable to ski turning by the ski shape difference or by the centre of gravity position difference. Figure 2 shows two pairs of skis, with respective side curve radii *R* of 400 mm and 800 mm.

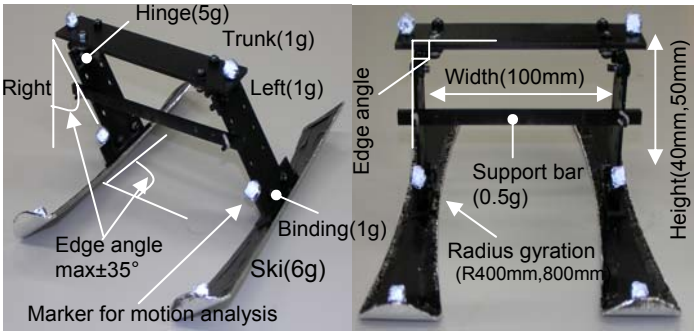

Figure 1: Photograph of passive turn type skiing robot (50g)

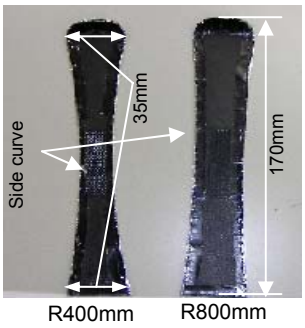

Figure 2: Design of ski

RESULTS AND DISCUSSION: Figure 3 shows the results. The height of the center-of-gravity affected the frequency of the skiing turn and the radius of a ski affected the radius of skiing turn.

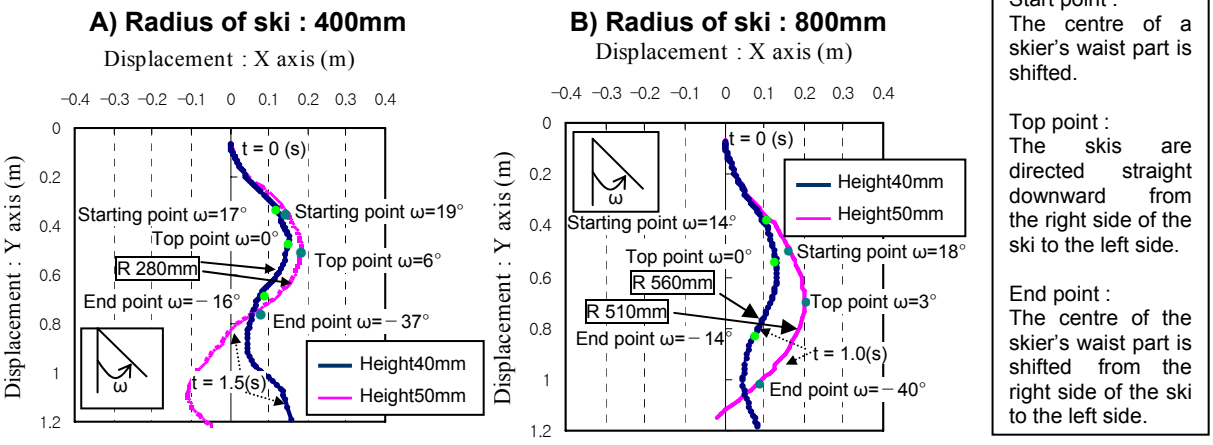

Figure 3: Experimental Results

REFERENCES: T. Yoneyama & H. Kagawa (2002). Study on the effective turn motion using a ski robot. *The Engineering of Sports* 4, 463-469.