THE LEARNING PROCESS OF UNIFORMITY SKILLS FOR NOVICE ROWERS

Ami Ushizu[1], Shigeki Kawahara[2], Hiroh Yamamoto[3]

Institute for Biomechanics Lab., Graduate School of Ed., Kanazawa Univ., Japan[1]
Ishikawa National Collage of Technology, Japan[2]
Biomechanics Lab., Fac. of Ed., Kanazawa Univ., Japan[3]

KEYWORDS: rowing, uniformity, oar, novice, learning

INTRODUCTION: In the crew events which row with a number of rowers, it is thought that the important technical element is the uniformity of crew how well rowers can synchronize timing of movement oars (Wing AM & Woodburn C, 1995; A Baudouin & D Hawkins, 2004). The highly uniformity skills also could make up for the total low power in the crew. In case of instruction for novice rowers, due to enhancement of uniformity skills, they may be able to feel the sensation of propulsive force of boat. Therefore, it is thought that this sensation would affect their interests in rowing. The purpose of this study was to identify the learning process of uniformity skills for novice rowers, and to obtain the basic data to instruct for novice rowers.

METHODS: In this program, participants were 200 students of Ishikawa National College of Technology in Japan. All students have never experienced for rowing. The contents at this program were instructions of rowing form on the Rowingergometers, and rowing boats for 20 minutes. Students divided into 5 groups (about 40 students per group). This program was held at Physical Education classes on a stated the day and time. 4 students get into rower seats (stroke, 3rd, 2nd, bow) and the instructor gets into cox seat on each boat. It was not specified that anyone takes any rower seats. The instructors engaged in giving students basic instruction (how to use oar, how to move their body). This program implemented 3 times/group (1 time per week).
The learning process of uniformity skill was estimated from the analysis of video images which was taken while participants were rowing boats. Parameters for estimating of the uniformity skills are time lag of CATCH-point (ms), time lag of FINISH-point (ms) and Rate (strokes/minute). Time lag of CATCH-point is the temporal difference between Stroke rower (who seated close to the stern of the boat) and other rowers when the blades are placed in the water. Time lag of FINISH-point is the temporal difference between Stroke rower and other rowers when the blades are lifted from the water. RATE is the number of strokes per minute by a crew.
In this research, Recreation boat, Macon blades (traditional U-shaped oar blade) and Rowingergometer (Concept2 TypeC) used to instruct for participants. Recreation boat is a shell with 4 rowers and cox, which makes it easier to learn basic rowing technique and less likely they will fall in water. Also, the filming while they were rowing boats was used Digital video camera (Sony, 30Hz).
The Freedman tests were used to analyze the changes in the mean of Time lag, which are reported as mean ± S.D. Spearman correlation coefficients were used to determine the strength of relationship between the parameters. The significance level was set at $p<0.05$ for all statistics.

RESULTS AND DISCUSSION: It was only 8 crews (32 students group) that could finish 3 sessions in this program. If Physical Education class was missed due to bad weather, they were

excluded from this study.

The results of the mean in time lag of CATCH-point have been calculated (Figure 1). The means ± S.D. of this were resulted in 193.6± 79.2 ms (session1), 157.1± 58.0 ms (session2) and 155.8± 62.8 ms (session3). Time lag of CATCH-point at session2 and 3 was lower than at session 1. However, this did not result in gradual reduction of the time lag. Furthermore, it is thought that there was a wide spread of learning skills for novice rowers because the standard deviation were large for each session. As a result, it is thought that the magnitude of standard deviation was affected by the improvement of uniformity skills and the learning of rowing form.

Additionally, the result of relationship between time lag of CATCH-point and RATE was calculated (Figure 2). There was a significant correlation between time lag of CATCH-point and RATE ($t=0.74$, $p<0.05$). Therefore, it was suggested that it is effective for novice rower to set a low RATE when they learn to rowing uniformity skill.

In terms of FINISH-point, there was no significant change of the time lag and no significant correlation with other parameters.

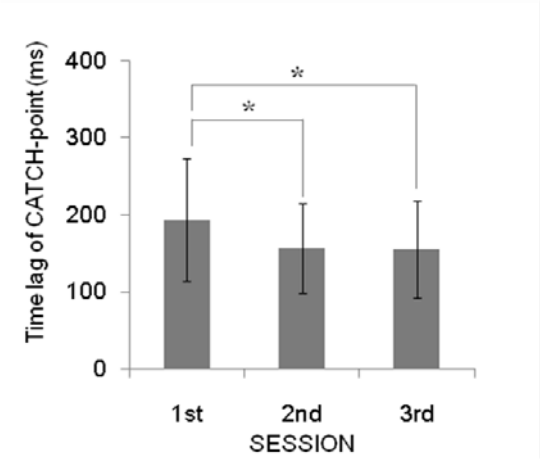

Figure 1. The mean of time lag of CATCH-point (ms) for each session

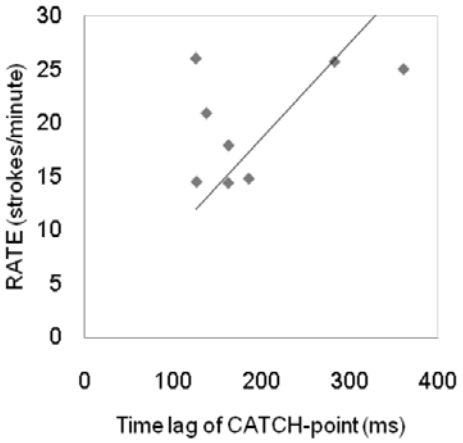

Figure 2. Correlation between the mean of time lag of CATCH-point (ms) and RATE (strokes/minute)

CONCLUSION: As these results of this program, it could identify the learning process of uniformity skill for the novice rowers. It is important for novice rower to set the low rate and to pay attention to CATCH-point in order to enhance the uniformity skills. We will need the longer term research in the future.

REFERENCES:

Wing AM and Woodburn C (1995).The coordination and consistency of rowers in racing eight. Journal of Sports Science, 13, 187-197

A. Baudouin, D.Hawkins (2004).Investigation of biomechanical factors effecting rowing factors. Journal of Biomechanics, 37, 969-976