ANALYSIS OF THE APPROACH RUN IN THE JAPANESE JUNIOR TRIPLE JUMPERS

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INTRODUCTION

Many studies on the approach or takeoff in the triple jump and long jump had been done. Recently, some scientific studies investigated characteristics of the approach run for the long jumpers focused on the step frequency, supporting time and non-supporting time. By analyzing these parameters, interesting findings on the approach run of the elite long jumpers were reported. For example, Omura et al. (2001a) investigated Women's long jumpers at 2000 Sydney Olympic game, and reported that Drechsler (GER, 6m99) had won the gold medal when she showed the smoothest change of step frequency and the supporting time during the approach run in her six trials. And also, the step frequency of the approach run was the highest at Jones (USA, 3rd place with 6m92) who had many fouls, and the lowest in May (Italy, 2nd place with 6m92) who had no foul. These results suggested that analyzing the parameters such as step frequency and supporting time may be useful to clarify a desirable run-up pattern and the problem of a run-up for each jumper. However, there are few data of these parameters concerning the junior triple jumpers.

The purpose of this study was to investigate the approach run of Japanese junior triple jumpers to obtain the fundamental findings on effective approach run for the junior triple jumpers.

METHODS

Eight junior men's triple jumpers, with personal best records ranging from 14.72m to 15.50m, were filmed at the final of 2001 Japan High School Track & Field Championships by the Biomechanical Project team of the Japan Amateur Athletic Federation. The whole of the steps of the approaches were recorded using a panning digital video camera (60fps) placed on the stadium beside the runway. The best trials of the jumpers were analyzed using FRAME DIAS system (DKH Co., Japan), and calculated following parameters: step length, step frequency during the last part of the approach run. Air Ratio, dividing the non-supporting time by the supporting time (Hayashi et al., 2000), was also calculated. Approach velocities were measured by Laveg Sport (Henley Japan co., Japan) placed on the stadium behind the jumper.

RESULTS AND DISCUSSION

The approach velocities of top three jumpers were ranging from 9.6m/s to 10.1m/s for the best records ranging from 15m50 to 15m16. These values were lower than those of the Japanese top jumper (10.44m/s of Sugibayashi for 16m78) and the World's top jumper (10.75m/s of Conly for 17m86). Furthermore, two of top three jumpers decreased their approach velocities during the last part of the approach run. On the contrary, World top jumpers, such as Edwards (England, personal best of 18m29) and Conly (USA, personal best of 17m87), tended to increase or maintain their velocities during the last part of approach run (Portnoy, 1997). Therefore, two major subjects for the Japanese junior triple jumpers are asked to solve in order to improve their performance: making the run-up velocity increase, and minimizing the loss of velocity during the last part of the run-up.

Hay (1978) mentioned that the approach run of the triple jump serves the same function and is performed in essentially the same manner as in the long jump. It may suggest that comparing the approach run of the junior triple jumpers with junior long jumpers might be useful to clarify the problem of the approach run for the junior triple jumper. Therefore, parameters such as the step frequency, supporting time of the junior triple jumpers were compared with those of Japanese junior long jumpers reported by Omura et al (2001b). Major differences were as follows:

1) Junior triple jumpers tended to show lower step frequency during the first half and the middle stage of the approach run.
2) Some triple jumpers tended to increase or decrease rapidly their step frequency during the last part of the approach.
3) Supporting time during the approach for the junior triple jumpers tended to become longer except for the last two steps.

These results may suggest that the junior triple jumpers are inferior to the junior long jumpers in the run-up technique. Because of the triple jump is more complicated event compared to the long jump, Japanese junior triple jumpers may be need to spend more time on run-up techniques as well as developing their muscle strength, power.

REFERENCES

Omura et al. (2001a) Proceedings XVIIth JSB Congress.