The Technical Report of National Trial on Long Jump and Triple Jump in February 2022, Sri Lanka

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Biomechanical evaluation of long Jumpers and Triple jumpers in the Sri Lankan context is extremely rare in the available research sources. The Set of High-speed cameras (> 100 Hz) and human movement analyzing software are expensive in the market and it will not an easy to use in competition mode. However, a set of high-speed cameras (100 Hz) systematically can be handled to capture the movement patterns of mentioned horizontal jumps during the National Selection (February 2022) at Sugathadasa Outdoor Stadium, Colombo. The major objective of this analysis was to provide insight into the Sri Lankan athletes' performance with the kinematic parameters which should be considered for optimum performance. The combination of speed, strength, and agility in an attempt to leap as far as possible from the takeoff point is the main physical incident in the horizontal jumps in Athletics. Also, run-up, takeoff, flight, and landing phases are critical in long jumps. Here, the speed of the last two-three steps, Ground Reaction Force (GRF of takeoff), Take of Height (TH), Takeoff Distance (TD), Takeoff Velocity (TV), Takeoff Angle (TA), Movement Pattern in the free air, Maximum Vertical Height (Hmax), Landing Distance (LD), and Landing Height (LH) are biomechanical factors which will be influenced for the performance of long jumpers. For the triple jumpers step, hop, and jump phases have to be scientifically compared in competitive situations. The two biomechanical factors of Junior Record Holder (Men's Long Jump) have to be improved: vertical velocity of Take-off, Leg extension before the landing (at 0.62 s in the flight phase). A long jumper has to overcome major errors in kinematics: lost vertical velocity of take-off and poor support leg knee angle 168^0 (Nearly 180^0 is better).

Keywords: Kinematics, Air Dynamics, National Team Members, Performance Barriers