

# The Fast and the Furious: Tracking the Effect of the Tomoa Skip on Speed Climbing

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Sport climbing is an athletic discipline comprised of three sub-disciplines – lead climbing, bouldering, and speed climbing. These three sub-disciplines have distinct goals, traditionally resulting in specialization of athletes into one of the three events. The year 2020 marked the first inclusion of sport climbing in the Olympic Games. While this decision was met with much excitement from the climbing community, it was not without controversy. The International Olympic Committee had only allocated one set of medals for the entire sport, necessitating the combination of the three sub-disciplines into one competition. Due to this format decision, many athletes who specialized in lead climbing and bouldering were forced to train and compete in speed climbing for the first time in their careers. One such athlete was Tomoa Narasaki, a World Champion boulderer from Japan, who introduced a new method of approaching the speed event that had never been attempted before. This approach, deemed the “Tomoa Skip”, was subsequently adopted by many of the top speed climbers. Concurrently, many speed records began to fall at a seemingly more rapid rate (from 5.48 seconds in 2017 to the current record of 5.009 seconds in 2022). Speed climbing involves both timed and head-to-head competitions where climbers must ascend a 15 meter wall with 5 degrees of overhang that contains the same pattern of obstacles every time. Due to this format, records can be compared across time, dating back to the first introduction of the standard speed route in 2007. In this project we will investigate the effect of the Tomoa Skip on the sport of speed climbing. We will incorporate methods from the change point detections, time series, and bootstrapping literature to answer two questions: (1) Did the Tomoa Skip result in a decrease in speed times? and (2) Do climbers who utilize the Tomoa Skip have a higher risk of falling (and being disqualified)?