Performance Point

Speed Analysis: How Fast Are You Going?

Canadian Sport Centre / Centre canadien multisport Pacific/Pacifique

by Michelle Wyngaarden, Lab Technician, Canadian Sport Centre Pacific November 2007

In sport, speed can determine winning the race, beating your opponent to the ball, or executing the perfect triple lutz. Since speed can be a determining factor in success, how can we train/test athletes to be the fastest in competition? Depending on the sport, there are different ways to measure and analyze speed. Timing lights can be used during training to provide coaches with a general idea of their athletes speed. The Canadian Sport Centre Pacifc Propulsion Tool and Speed Encoder both require more time and equipment, but produce a more accurate depiction of an athlete's speed profile.

Timing Lights

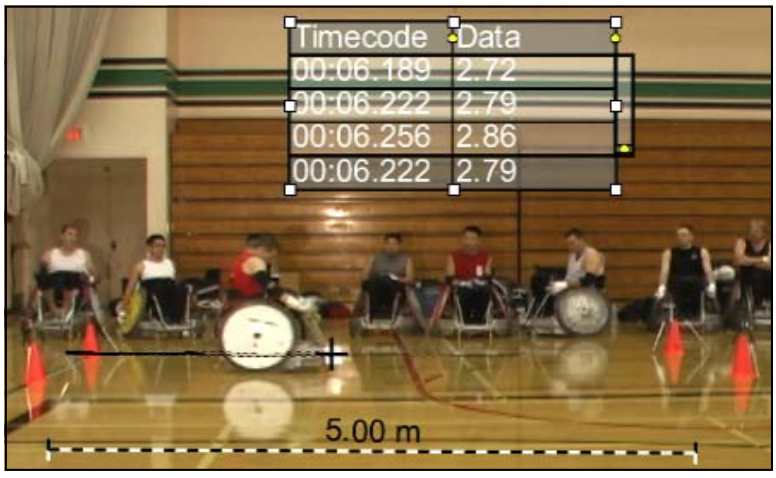
Timing lights are a simple way to quickly calculate an average speed across a given distance. Brower Timing Lights® calculate time by infrared light beams shone between an emitter and reciever that acitivates the clock to start or stop when the light beams are crossed. The time can then easily be substituted into the mathematical equation to calculate speed: **Speed = Distance / Time.** Set up is quick and easy and can thus be used throughout training. Athletes are provided with immediate results including a time to beat, which can be used to motivate and increase enjoyment during practice. This device is fairly inexpensive, but relies on the athlete travelling straight across the beams to produce the most accurate results.

Canadian Sport Centre Pacifc Propulsion Tool

This tool was designed to calculate the speed and acceleration of wheelchair athletes during a 5m speed test. The athlete is filmed live through Dartfish, a software program geared towards analyzing digital images. A marker is placed on the front part of their chair and is tracked along the distance. Dartfish creates a table with the marker's position along the movement, and exports that data to a spreadsheet. The Propulsion Tool is able to use this data and calculate speed and acceleration. Unlike finding an average speed over a distance, this tool produces graphs showing the athlete's fluctuation of speed along the movement as well as calculating the athlete's maximum and minimum speed and acceleration values. It is more costly and time consuming to analyze the videos and immediate feedback cannot be given.

Canadian Sport Centre Pacifc Speed Encoder

The speed encoder was recently designed by Canadian Sport Centre Pacifc Biomechanist, Dr. Allan Wrigley, for measuring speed and acceleration for wheelchair athletes. The encoder attaches to the chair and records the linear motion of the chair. It produces metadata for distance, speed, and acceleration in real time that is directly linked to the video feed in Dartfish. The results are similar to the Propulsion Tool, however it is calculated instantaneously for immediate feedback. As well, the Dartfish video clip stores graphs of both speed and acceleration to facilitate a direct comparison with the video and the graphs. This system is able to help diagnose minute problems in propulsion which may cause the athlete to slow down. Immediate results are provided requiring no further analysis, cutting back on time and costs.



Analysis of the Canadian Wheelchair Rugby team performing the 5m test.

If you are interested in learning more about applying speed training/testing to your sport, please contact your Canadian Sport Centre Pacifc Performance Analyst.

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