"The faster you start, the sooner you get to the bottom", seems a reasonable statement. However, there may not be agreement or well documented evidence as to what makes a fast start. I recently found a research paper, written by members of The Italian Federation of Winter Sports (LAP-Federazione Italiana Sport Invernali). Since it was published in the abstracts of The 2nd International Congress on Skiing and Science, held January of 2000, in St. Christoph a Arlberg, Austria, I assume the data was collected sometime in the late 1990's.

The purpose of their study was, and I quote "to evaluate the relationship between the characteristics of force production at the push-off and the time and velocity performance in the 50.5m subsequent to the start." In plainer text, in the start gate of a downhill they wanted to determine if how hard and long a racer poled through the start gate affected their overall start speed.. Time data for several points between the start and 50.5m was collected, but only the first 2.5m and 50.5m was reported. Force was measured and time was started by force platforms, in the start area placed under the racers pole tips. When pole tip pressure was increased to begin the push the timer was started and measured elapsed time at points along the first 50.5m including the time the racer actually tripped the wand.

Personally, my reaction was "of course it does", but the results are very interesting and not what I expected. Generally subjects that developed the most force on their poles had the shortest time between when they started poling and when they opened the wand. Which means the force of their push got them to the wand quickest. Unfortunately, their upper body strength didn't actually generate as much actual down the course speed as other racers obtained. The racers that developed less force on their poles but spent more time leaning on them opened the wand later, but less time elapsed from the time they hit the want until they traveled the first 2.5m, which meant they were actually faster on the course.

The authors don't actually discuss body position in the paper, so we are left to imagine what each racer's actual start technique looked like. What I came up with is this. The racers that developed the most pole force started hard and explosively by poling and skating hard out of the gate and through the wand. The racers that developed lower force, but longer time on poles probably used a higher jump and backwards swing of their skis. This would increase time spent on poles and also delay their time to the start wand. However, it developed more total speed down the course which is why their time from hitting the wand to 2.5m was faster. The authors also reported some of the time differential disappeared by the time racers had traveled the full 50.5m and attributed this to ski preparation and skating. The authors paper seem to show that jumping high and backwards with the feet then swinging them rapidly through the wand generates the most speed.

Hope you can benefit from this research. More reports will follow when I find research that can be used for better results. Am waiting for reports on a goal setting paper and one on conditioning techniques to reduce knee pain.

Lou