

The Family Business: How to be a World Champion

Kristan Bromley relies heavily on the help and support of a number of people to keep him at the sharp end of a sport that affords little room for error

Most sporting events can be broken down to simple phrases that belie the effort and skill and dedication required to perform them in any meaningful sense: "defend yourself at all times"; "get the ball in the back of the net"; "get to the bottom faster than everyone else". Expanding the latter even a little and the picture begins to get substantially more complicated. The ability to beat the competition is going to be a function of physical conditioning, technique (lest all your conditioning be wasted) and finally how well fitted your equipment is to you and the task at hand. When fractions of a second can cover the whole field, two out of the above three isn't going to be good enough. Now consider that any one of them is a topic that can – and does – fill volumes of research by itself.

When considered in this light, it doesn't seem accurate for any sport, let alone the Skeleton, to be considered an individual event in any meaningful sense.

So it is that Kristan Bromley relies heavily on the help and support of a number of people to keep him at the sharp end of a sport that affords little room for error, somewhere he's been for an impressive 13 years.

Gym sessions are monitored closely by a dedicated conditioning coach and followed up by intense physiotherapy to help his body recover in time for the next session. Push track sessions are assisted by sports psychologists and more coaching staff all aiming to ensure that the gains made in the punishing fitness and strength sessions are converted to shedding the fragments of time that make for medals.

But Skeleton is very much a family affair for Kristan: his fiancée is current world champion and fellow Bromley development rider, Shelley Rudman, and Bromley Technologies was co-founded with brother, Richard. Making a family enterprise work is a notoriously delicate process, but get it right and the pay-off is far greater than a bit of mutual understanding over the number of evenings or weekends sacrificed, or gym bags full of laundry generated. The depth of understanding and sometimes brutal honesty that can exist between people who are close can of course lead to explosive disagreements, but when managed correctly there exists a structure that lends itself to quick decision making and the basis of a powerful and committed support network.

The Bromley Family (left to right) daughter Ella, Kristan Bromley, fiancée Shelley Rudman, mother Mavis, brother Richard and father Ray.





Richard Bromley has been shouldering the burden of taking feedback from Kristan as a development rider and converting it and test and simulation data in to faster sleds for 14 years now. However, this focus is as much about a dedication to Bromley Technologies as it is about getting his brother on to the top step of the podium, and Kristan wouldn't have it any other way "Shelley and I are development riders for Bromley. It's more accurate to think of us as being sponsored by Bromley Technologies, rather than it working for us." This subtle distinction between having a brother and a shared company working for you and your medal ambitions and you being one of the test pilots for that same company is a very important one. The former set up could quickly become self-absorbed, irrelevant and ultimately insolvent, while the latter can thrive on the competitive spirit and in fact be more competitive precisely because it has broadened its outlook.

That's certainly how Kristan sees it "The success [Shelley and I have had] is down to maintaining a focus on finding a competitive edge through the innovation in our products." Thus the wheel of innovation turns for Bromley: the risk taking on the part of the development riders generates success on the track for Bromley equipped riders, which in turn generates new business



Bromley Technologies Founders: Kristan Bromley (left), & brother Richard Bromley (right)

for the company and therefore the ability to invest in further innovation. Bromley Technologies is supported by its development riders who work on behalf of their customers, a job best accomplished by trying to claim the top step of the podium themselves. Considered in these terms, it's difficult to know if it's more accurate to say that the success of Kristan and Shelley on the track is due to their relationship with Bromley Technologies, or that Bromley Technologies is a successful venture due to the ambitions of its development riders. It may even be that this blurring over who is offering the support to who is the greatest success of the Bromley brothers story.

The Road to Sochi 2014

Engineering Edge caught up with Richard Bromley to ask how the recent test session in Norway went for the team. "Norway was mainly about aerodynamic testing" explains Richard "the last 1/3 of the track is pretty fast and we know it so well that we can then separate out the aero gains from any other factors." This is ahead of St. Moritz World Championships the longest track on the circuit where aero gains are a major consideration. "We know our baseline CFD model matches well with the wind tunnel data, so we can have confidence that the trends we see in simulation as a result of any enhancements are genuine ones."

And so it proved to be in Norway, with each enhancement demonstrating an incremental improvement in performance. Such testing is about more than simply re-enforcing confidence in simulation though (although the author feels obliged to say that the CAE engineer who loses their sceptical side is on a slippery slope; no pun intended). One thing CFD can't do is predict how a given chassis modification will feel to the athlete, "the CFD will only tell us what's aerodynamically more efficient, but we also need to know how the resultant changes affect the athlete: they need to be able to hold their position or control the sled comfortably for it all to be worthwhile."

It's back to HQ now to post-process the results further, ensuring that every last bit of data is extracted from the hard weeks put in on the track, before adding the results to the already considerable library built up on their home track.



The XXII Olympic Winter Games

- 6850 Olympic and Paralympic athletes from 33 nations will compete in the 16 day event
- The Winter Olympic Games are made up of 15 sport disciplines of seven sports including Biathlon, Bobsleigh, Curling, Ice Hockey, Luge, Skating, and Skiing
- The Paralympic Games are made up of 1350 athletes competing in Alpine Skiing, Biathlon, Cross-Country Skiing, Ice Sledge Hockey, and Wheelchair Curling
- Bobsleigh is a winter sport invented by the Swiss in the late 1860s in which teams make timed runs down narrow, twisting, banked, iced tracks in a gravity-powered sled
- Skeleton racing involves plummeting head-first down a steep and treacherous ice track at 90mph on a tiny sled. It is considered the world's first sliding sport
- Curling is also known as 'The Roaring Game', it's nickname originating from the rumbling sound the 19.96kg granite stones make when they travel across the ice
- The ringing of cow bells during downhill skiing stems from the French tradition of scaring off the abominable snowman (l'homme terrible de froid) rumored to wander snow covered mountain valleys