

Technique secrets revealed!

I was asked the other day how I keep up with technique changes, and how I separate real innovations versus fads. I've been coaching since 1983, and was a CANSI (Canadian Association of Nordic Ski Instructor) member for 6 years before that, and started skiing 6 years before that, so I have seen a lot of technique changes over the past 39 years, some of which were real innovations, some of which were fads. Some of the technique changes have come about from various people experimenting and discovering better, faster, more efficient ways of doing things, some of the changes comes from developments in faster ski bases, lighter equipment, better grooming, better waxes, better boots and binding systems and yes, better prepared skiers.

Over this almost 4 decades I've developed a coaches perspective at judging technique and technical changes. I've become much more demanding in the criteria by which I judge. I look at it from the perspective of physics (snow and Newtonian physics), biomechanics, kinetics, energy systems and vector analysis etc. and if you can't explain to me how a particular change in technique or equipment is better, faster, more efficient or effective in those scientific terms, then I'll think that it is, at best, a peculiar personal bias (perhaps supported by a specific strength or weakness or physical peculiarity of the coach or athlete) or, at worst, a fad. And even with this rigorous approach, I am still fooled some of the time. That's when the last step comes in play, experimentation and reproducible results. I've attended numerous instructors and coaches clinics and updates and some of how I keep up with changes, come from that and with discussions with other coaches, skiers and athletes. However it is peculiar in that instructors (as in the CANSI organization) are often several years behind in innovation, high level coaches are usually only a year or so behind (they retrospectively look at changes from the last years race season) but they are fairly secretive (they want the advantage to stay with their athlete or country for as long as possible) and many lower level coaches simply have not the experience or a rigorous enough approach to technique or technical changes. And the fastest skiers or athletes, may not be the most technically proficient or efficient skier. Despite that, some gems can be gleaned from all those various sources. For example, Dr. Hans Cristov Holmberg of the Swedish Winter Sports Centre in Ostersund (yes they have a whole University level staff studying nothing but nordic skiing) recently discussed at a FIS (Federation Internationale des Ski) seminar the cutting edge of skating technique being developed. This is a scientific study of skating where they look at kinematic visual analysis, and kinetic relationships and force/energy characteristics of muscle activity associated with skating. They found that a explosive, shorter poling phase with more abduction of the elbow joint and a slightly wider elbow angle with less elbow extension, quicker hip flexion higher angular velocity with 0.05 seconds to peak force versus the 0.1 second traditional peak resulted in faster skating speeds. They found that skating with knees locked versus more relaxed, resulted in higher blood lactate concentrations, higher heart rate with same total VO2 max and up to 11% lower pole force. They found a 14% increase in speed with a higher poling frequency (13% shorter recovery). They had recommendations for pole length, training etc. etc.

Now the problem becomes, how do you translate all this information to benefit the average aspiring skier or athlete (or even the elite skier/athlete)? When you are at the higher levels of coaching, you have to look at not only the resources and findings in one specific sport but those of other sports to see if something that your sports have not even thought about, is practiced in another sport. So look at speed skating, track and

field, cycling etc. One of the items that Dr. Holmberg talked about was the double skate technique used in in-line speed skating. This is where an in-line skater use both the inner and outer edges of his skates (wheels) to generate more power and maintain a higher speed. They use the outer edge (little toe side) of his skate during what would normally be the recovery stage. You can see examples of this on Youtube where they even have instructional videos of this for in-line skating. This double skate technique is yet to be used in ski skating (I've seen an example but don't really think it's developed to be a usable technique that will help win races yet - speed is not usually fast enough ie not enough glide, in ski skating). But it got me thinking and experimenting. What I came up with is the skate skate technique for getting around a corner faster and more efficiently. A technique that you will not likely be shown by (m)any other coach. Another technique that I picked up from hanging around the finish line at World Cup events is the small V, big V skate. At high level events the finish lane is a dedicated lane so the snow is freshly groomed. I started noticing that the tracks of the fastest skiers often started with a smaller V then curved to a larger V as they apply power and skated off the ski. What's that all about? It made sense, that with a smaller V you spent more time going toward the finish line and less time going from side to side and you only go to the wider V when you need the platform to edge off of to apply power but was this something the average skier can apply and is it more efficient as well as faster even at less than all out efforts(note that faster is not always more efficient, racers are all about speed and sometimes they sacrifice efficiency for speed)? After about 3 years of experimentation I can say that the small V big V is faster and more efficient, so now I teach that new technique.

So I've developed a host of innovative techniques, I've also talked to many high level coaches to try to glean their innovative techniques (while putting their techniques through my rigorous analysis). I've maintained contact with coaches throughout BC and Canada just for that reason (while they may be reluctant to share in public, they often will one on one, especially if you have a relationship with them for some years - I still have Dave Wood the former Canadian National Ski Coach in my linkin contacts and I recently ran in and talked with Mike Bell former national CANSI master course conductor). So in answer to how I keep up and how I separate the wheat from the chaff, the answer is, through many ways and through an rigorous approach and analysis.

Learn more about real innovative technique changes, take a lesson or get some coaching...