

## **Handicaps**

### **- What Are They and How Are They Derived?**

By Ian Puleston

When our race results are published, not only are our times and positions reported, but also we are given handicaps. There are strike times given for each class, and sometimes it says that we have a strike. Also there are cut-off times given for each class, and sometimes we don't get any points. What do these things all mean, and how are they calculated?

### **What is a Handicap?**

A ski-racing handicap is a measure of how fast a racer is, compared to a theoretical best racer in the USA. That best racer in the USA has a handicap of zero, and a racer who is "n" percent slower than him has a handicap of "n". So if a racer has a handicap of 20 he is 20% slower than that best racer in the USA, and if the best racer in the USA could ski a particular course in 100 seconds, then our racer would take 120 seconds.

The only skiers in our league who actually have an officially recorded handicap are the pacesetters. They attend a pre-season trial where their performance is measured against racers with an officially recorded handicap, who in turn were measured against the country's top skiers, and from that they are given a handicap for the season. For the rest of us, our handicap is worked out for each individual race by comparing our time to the times of the pacesetters on the same course. How is that done?

### **How is a Handicap calculated?**

To convert everyone's times on a particular course into handicaps we must first calculate how fast that theoretical racer with a handicap of zero would ski it. That is known as the "Zero Par Time" (ZPT) for the course, and is derived from each pacesetter's time by:

$$ZPT = Time / (1 + (Handicap / 100))$$

So, if a pacesetter with a handicap of 20 skis a course in 30 seconds, the ZPT for that course would be calculated from his time as  $30 / (1 + 0.20) = 25$  seconds. Any pacesetter times that result in a particularly high or low ZPT are discarded, and the rest are averaged to give the ZPT for the course (which is the time that the theoretical best racer in the USA should take to ski it).

Once we have the ZPT for the course, we can calculate the handicap for each racer from it. If a racer with a zero handicap would ski the course in that time, and you skied it "n" percent slower, then your handicap is "n". Hence, each racer's handicap is derived from the ZPT by:

$$Handicap = ((Time / ZPT) - 1) \times 100$$

Or, expressed more simply, your handicap is "nn" where your time divided by the ZPT equals "1.nn".

## **What is a Strike Time and how is it calculated?**

So what is a strike time? Well, beating your class's handicap is known as a “strike”, and when you have registered two strikes you are moved up to the next class. For example, if you are in the S6 class (who's range is 60-69.99) and get a handicap lower than 60, then you have a strike. The time that you need to achieve in order to get that handicap is known as the “Strike Time”. So, the strike time for a class is the time corresponding to the top of the handicap range for that class (for S6 it is the time that would give a handicap of 60) and is calculated by:

$$\text{Strike Time} = \text{ZPT} \times (1 + (\text{Top handicap of class} / 100))$$

## **Why do Strike Times get adjusted after the race?**

Now we come to the “fudge-factor”. In a perfect world all of the above might work just fine. However, the pacesetters might all have a good or bad day, or a particular course might favor the more advanced skills of the pacesetters, making everyone else seem slow in comparison, or the opposite might happen. To deal with that we look at the total number of strikes on each course and may manually adjust the ZPT. If more than about 10% of racers on a course have strikes, we lower the ZPT (which increases everyone's handicap) to bring it down. So remember that strike times written on the poster boards at the bottom of your race course are provisional, and may get changed before the final results are announced.

## **What is a Cut-Off Time?**

And what is a cut-off time? There is a cut-off point below which you don't get any points, which is set by the FWRA as the bottom of the handicap range of the next lower class. However, in Singles League we are more generous and give you points if you beat the bottom of the handicap range for the class that is two below yours (e.g. the cut-off time for S6 is calculated from the bottom of the handicap range for S8, which is 89.99). The cut-off time is derived from that handicap in the same way that the strike time is derived from its handicap.