

## **Pace Yourself**

By Tom Overbaugh

Being able to estimate distance traveled is an important skill for any orienteer. In feature-rich terrain, this can often be done by navigating from one major topographical feature to another. Blander areas, however, require a more exacting approach. The skill of choice in this type terrain is pace counting. Pace counting usage varies among orienteers. Some choose to pace count often. Others use it rarely or never. Personally, I find pace counting to be an invaluable tool in situations where the map provides limited information: featureless flats, bland hillsides, or reduced visibility vegetation. A good example of DVOA terrain that lends itself to pace counting is French Creek. Particularly when combined with use of the compass, pace counting will almost always get you close. It can help prevent the large mistakes that can arise when you are unsure of your exact location.

### ***Determining Your Pace Count***

The easiest way to measure your pace count is to mark off an easily identifiable 100 meter wooded segment on an existing map. Then go out to the park and run or walk it, counting a pace with each strike of the right or left (not both) foot. Do this several times and take an average. You may also want to measure your pace on slight uphill or downhill gradients to see how the slope affects your pace. In general, the walking pace per 100 meters will be about 50% higher than the running pace.

### ***Making a Pace Scale***

Many orienteers memorize their pace count per 100 meters. Knowing their pace count, they can do some (hopefully) quick math in their head while on their course to determine how many paces they have to travel to get from one point to another. An easier approach is to make up a pace scale that you can attach to your compass baseplate. This eliminates the need for mental arithmetic by oxygen-deprived brains. I generally keep running pace scales on hand for both 1:10,000 and 1:15,000 maps that I can easily attach to my compass. When I want to determine how many paces between points, I just use the pace scale to measure. It is as simple as using a ruler – the only difference being that the gradations are marked off in 50 pace increments rather than inches or millimeters.

Adhesive-backed mailing labels are a good medium for making a pace scale. After selecting the desired map scale, take your pace count per 100 meters and calculate the length required between tick marks on the scale in the desired pace increments. To save you the math, Table 1 shows gradations in millimeters for 50 pace and 100 pace increments at 1:10,000 and 1:15,000 map scales. For example, my running pace is 38 paces per 100 meters. To construct a 1:10,000 pace scale with gradations every 50 paces, I place tick marks every 13.2 millimeters. The following formula was used to construct Table 1 (and can also be used to calculate gradations for map scales other than 1:10,000 and 1:15,000):

$$G = I \times 100,000 / (P \times S)$$

Where:

G = gradation spacing, mm

I = pace tick mark increment (typically 50 or 100 paces)

P = pace count per 100 meters

S = map scale (10,000, 15,000, etc.)

For example, for a 1:10,000 pace scale with a pace count of 38 paces per 100 meters and tick marks at 50 pace increments, the gradation spacing will be:

$$G = 50 \times 100,000 / (38 \times 10,000) = 13.2 \text{ mm}$$

Affix the scale to the compass and cover with clear tape for moisture protection.

### ***Using Your Pace Scale***

Once you have constructed your pace scale, you will find that it makes it very easy to pace count. The toughest part is maintaining your concentration so that you do not lose track of your pace count. Pace counting can help you spike controls, avoid over or undershooting, and turn what would have been large

errors into minor ones. It can also be very useful in making small navigational decisions – knowing when to turn off of a trail, for instance. Make up a pace scale and give it a try!

**Table 1:** Pace scale gradations for various pace counts at 1:10,000 and 1:15,000 map scale

**PACE SCALE CALCULATIONS**

Running Pace per 100 meters: 38

Walking Pace per 100 meters: 57

Pace Count per 100 meters	1:10,000 Map Scale		1:15,000 Map Scale	
	mm per	mm per	mm per	mm per
	50 Paces	100 Paces	50 Paces	100 Paces
30	16.7	33.3	11.1	22.2
31	16.1	32.3	10.8	21.5
32	15.6	31.3	10.4	20.8
33	15.2	30.3	10.1	20.2
34	14.7	29.4	9.8	19.6
35	14.3	28.6	9.5	19.0
36	13.9	27.8	9.3	18.5
37	13.5	27.0	9.0	18.0
38	13.2	26.3	8.8	17.5
39	12.8	25.6	8.5	17.1
40	12.5	25.0	8.3	16.7
41	12.2	24.4	8.1	16.3
42	11.9	23.8	7.9	15.9
43	11.6	23.3	7.8	15.5
44	11.4	22.7	7.6	15.2
45	11.1	22.2	7.4	14.8
46	10.9	21.7	7.2	14.5
47	10.6	21.3	7.1	14.2
48	10.4	20.8	6.9	13.9
49	10.2	20.4	6.8	13.6
50	10.0	20.0	6.7	13.3
51	9.8	19.6	6.5	13.1
52	9.6	19.2	6.4	12.8
53	9.4	18.9	6.3	12.6
54	9.3	18.5	6.2	12.3
55	9.1	18.2	6.1	12.1
56	8.9	17.9	6.0	11.9
57	8.8	17.5	5.8	11.7
58	8.6	17.2	5.7	11.5
59	8.5	16.9	5.6	11.3
60	8.3	16.7	5.6	11.1
61	8.2	16.4	5.5	10.9
62	8.1	16.1	5.4	10.8
63	7.9	15.9	5.3	10.6
64	7.8	15.6	5.2	10.4
65	7.7	15.4	5.1	10.3

66	7.6	15.2	5.1	10.1
67	7.5	14.9	5.0	10.0
68	7.4	14.7	4.9	9.8
69	7.2	14.5	4.8	9.7
70	7.1	14.3	4.8	9.5
71	7.0	14.1	4.7	9.4