

Bernard Cup Age Handicap Formulas

The Bernard Cup age handicapping system was created by Bob Bernard of the Far West Masters to provide a ranking system across the broad range of age classes in masters competition. The formula was originally created as a handicapping system for ranking results in a two-race GS series, run using 10-year age classes. Variations of the formula were provided by Karl Brown of FWM for handicapping SL and for a triple-combined SG/GS/SL race series run with 5-year national age classes.

The formula is based on applying an age bonus adjustment to the racer's total time: the older the age class, the greater the percentage adjustment to their time. The handicapping system uses unadjusted times for the youngest age class (20's) to establish the baseline, with an age class adjustment factor of 1. For each age class in increasing age order, the racer's time is adjusted by X% to compensate for their age in comparison to the younger racers, where the X% value is determined by the type of race(s) being scored and the age class range.

Bernard Cup Formula for 10-year Far West age classes (GS)

$BCTime = Time * (1 - (HANDICAP * ((ageClass.startAge / 10) - 2)))$
where HANDICAP = 0.05 (5% handicap per 10-year age class)
and ageClass.startAge = 20, 30, 40, 50, 60, 70, 80

The GS handicap factor is 5% per 10-year age class. The age class time adjustment factors range from 1 for 20's (i.e., their actual time is used), through 70% for 80's (their handicapped time is 70% of their actual time).

Age Class	Age Class Factor	Adjustment Formula	Adjusted Time
20	1	$(1 - (0.05 * 0))$	Time
30	95%	$(1 - (0.05 * 1))$	Time * 0.95
40	90%	$(1 - (0.05 * 2))$	Time * 0.90
50	85%	$(1 - (0.05 * 3))$	Time * 0.85
60	80%	$(1 - (0.05 * 4))$	Time * 0.80
70	75%	$(1 - (0.05 * 5))$	Time * 0.75
80	70%	$(1 - (0.05 * 6))$	Time * 0.70

Bernard Cup Formula for 10-year Far West age classes (SL)

$BCTime = Time * (1 - (HANDICAP * ((ageClass.startAge / 10) - 2)))$
where HANDICAP = 0.06 (6% handicap per 10-year age class)
and ageClass.startAge = 20, 30, 40, 50, 60, 70, 80

The SL handicap factor is 6% per 10-year age class. The age class time adjustment factors range from 1 for 20's (i.e., their actual time is used), through 64% for 80's (their handicapped time is 64% of their actual time).

Age Class	Age Class Factor	Adjustment Formula	Adjusted Time
20	1	$(1 - (0.06 * 0))$	Time
30	94%	$(1 - (0.06 * 1))$	Time * 0.94
40	88%	$(1 - (0.06 * 2))$	Time * 0.88
50	82%	$(1 - (0.06 * 3))$	Time * 0.82
60	76%	$(1 - (0.06 * 4))$	Time * 0.76
70	70%	$(1 - (0.06 * 5))$	Time * 0.70
80	64%	$(1 - (0.06 * 6))$	Time * 0.64

Bernard Cup Formula for 5-year age classes (GS, triple-combined)

BCTime = Time * (1 - (HANDICAP * (ageClassNumber - 1)))
where HANDICAP = 0.025 (2.5% handicap per 5-year age class)
and ageClassNumber = 1, 2, 3, ... 11, 12, 13

The GS/triple-combined handicap factor is 2.5% per 5-year age class. The age class time adjustment factors range from 1 for 20's (i.e., their actual time is used), through 70% for 80's (their handicapped time is 70% of their actual time).

Age Class	Age Class Factor	Adjustment Formula	Adjusted Time
1 [20..29]	1	(1 - (0.025 * 0))	Time
2 [30..34]	97.5%	(1 - (0.025 * 1))	Time * 0.975
3 [35..39]	95%	(1 - (0.025 * 2))	Time * 0.95
4 [40..44]	92.5%	(1 - (0.025 * 3))	Time * 0.925
5 [45..49]	90%	(1 - (0.025 * 4))	Time * 0.90
6 [50..54]	87.5%	(1 - (0.025 * 5))	Time * 0.875
7 [55..59]	85%	(1 - (0.025 * 6))	Time * 0.85
8 [60..64]	82.5%	(1 - (0.025 * 7))	Time * 0.825
9 [65..69]	80%	(1 - (0.025 * 8))	Time * 0.80
10 [70..74]	77.5%	(1 - (0.025 * 9))	Time * 0.775
11 [75..79]	75%	(1 - (0.025 * 10))	Time * 0.75
12 [80..84]	72.5%	(1 - (0.025 * 11))	Time * 0.725
13 [85..89]	70%	(1 - (0.025 * 12))	Time * 0.70

Bernard Cup Formula for 5-year age classes (SL)

BCTime = Time * (1 - (HANDICAP * (ageClassNumber - 1)))
where HANDICAP = 0.03 (3% handicap per 5-year age class)
and ageClassNumber = 1, 2, 3, ... 11, 12, 13

The SL handicap factor is 3% per 5-year age class. The age class time adjustment factors range from 1 for 20's (i.e., their actual time is used), through 64% for 80's (their handicapped time is 64% of their actual time).

Age Class	Age Class Factor	Adjustment Formula	Adjusted Time
1 [20..29]	1	(1 - (0.03 * 0))	Time
2 [30..34]	97%	(1 - (0.03 * 1))	Time * 0.97
3 [35..39]	94%	(1 - (0.03 * 2))	Time * 0.94
4 [40..44]	91%	(1 - (0.03 * 3))	Time * 0.91
5 [45..49]	88%	(1 - (0.03 * 4))	Time * 0.88
6 [50..54]	85%	(1 - (0.03 * 5))	Time * 0.85
7 [55..59]	82%	(1 - (0.03 * 6))	Time * 0.82
8 [60..64]	79%	(1 - (0.03 * 7))	Time * 0.79
9 [65..69]	76%	(1 - (0.03 * 8))	Time * 0.76
10 [70..74]	73%	(1 - (0.03 * 9))	Time * 0.73
11 [75..79]	70%	(1 - (0.03 * 10))	Time * 0.70
12 [80..84]	67%	(1 - (0.03 * 11))	Time * 0.67
13 [85..89]	64%	(1 - (0.03 * 12))	Time * 0.64