

Boulder Mountain Tour 2011: Age-Adjusted Overall Placing for WOMEN

These new age-adjusted rankings were determined by Dr Dan Heil, Professor of Exercise Physiology, at Montana State University-Bozeman, using standard statistical analyses. All questions and comments regarding this analysis should be directed to Dr Heil via email (dheil@montana.edu).

In general, the analysis relied upon an evaluation of skiers who were ≥ 18 years of age (18-84 year old range for 2011) and whose official finishing times were not greater than 3 standard deviations away from an age-predicted preliminary analysis. Given these limitations, the resulting skiers were statistically evaluated to determine the relationship between actual BMT ski finish times and age as reported by the official BMT race results. Once this relationship was determined, the age-adjustment was determined and then applied to all skiers of the same gender and who were ≥ 18 years of age. The adjustment itself gives a time "credit", as determined by the statistical analysis, to anyone who is slower than the fastest aged males (18-30 year olds). While an obvious result of the analysis is a re-sorting of names and places, the relationship between overall placing and age is the most dramatic and interesting. For example, the original overall placing males ranged in age from 22 to 30 years of age, but the top 10 age-adjusted males range in age from 48 to 70 years! Also note that the original top 10 men, all highlighted in yellow, are still mostly within the top 40 of age-adjusted times. You may be wondering, "Why would older skiers suddenly move into the top places after adjusting for age?" While there are probably a variety of contributing explanations, both skiing skill and racing experience continue to improve for decades past what is typically thought of as our physiological prime. In addition, the age-adjustment process itself is likely most beneficial to older skiers whose physiology and training habits have declined the least, or maybe even improved, since their physiological prime. For example, imagine that the age-adjustment analysis determines that 60 year olds are, on average, 18% slower than the fastest female skiers. This 18% is based upon what the analysis considers to be the "average" 60 year old. But now imagine a real 60 year old whose actual race time was only 9% slower rather than 18% – The age-adjustment technique will still apply the same correction to this super fast 60 year old as well as to the average 60 year olds.

The statistical procedures used for this analysis adjusts for any variable, known or unknown, said to correlate with age in a predictable fashion which includes both physiological (e.g., aerobic capacity, upper and lower body power, body composition) and behavioral characteristics (i.e., quantity and quality of training). However, the technique has no method to account for factors not directly related to aging, such as pacing strategies used during the race, skate skiing skill, choice of wax/grind/flex of skis, as well as nutrition and hydration strategies used both before and during the race. In reality, the type of adjustment will vary from year to year due to variations in weather, snow conditions, and exactly who shows up to race. This is NOT the same type of correction sometimes used in running races. It is my understanding that running races adjust by percentage for age-related physiological capabilities. The same could be done for Nordic skiing as well, but skiing skill and experience relative to the type of ski race and race-day environmental conditions are things that tend to improve with age rather than decline. There is certainly no perfect analytical technique to adjust for all known and unknown age-related factors with skiing performance, so please considered the current analysis a first step to understanding this process better.

The primary purpose of this analysis is solely to create some fun conversations amongst skiers about what really determines skiing performance and how amazingly fast some of our older skiers really are. Please do not interpret this analysis as a slight to the real race winners or the real age-group winners. I welcome your comments and feedback.

Please enjoy & ski fast!

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Original Overall Women's Ranking	Skier Name	Skier City	Bib Number	Age	Age-Adjusted Women's Place Ranking
13	Elizabeth Youngman	Sun Valley	117	51	1
14	Adrienne Leugers	Hailey	108	51	2
88	June Lane	Truckee	166	64	3
27	Muffy Ritz	Ketchum	128	53	4
10	Roxanne Toly	Park City	109	48	5
107	Dagmar Eriksson	Bend	401	65	6
25	Susan F Reynolds	Truckee	131	51	7
9	Mia Stockdale	Vail	138	46	8
140	Grace Dyck	Hailey	611	69	9
85	Linda McClatchy	Hailey	422	61	10
34	Liz McGoff-Hayes	Bozeman	126	50	11
4	Brooke Hovey	Ketchum	110	38	12
22	Heidi Watanabe	Ketchum	132	47	13
60	Katherine Nalen	Ketchum	146	54	14
61	E J Harpham	Bellevue	153	54	15
92	Marilyn Franzen	Minneapolis	418	58	16
1	Evelyn Dong	Bend	101	25	17
76	Kim Springer	Wilson	170	56	18
12	Liv Jensen	Hailey	120	39	19
65	Carol Severa	Boise	152	53	20
21	Tina Gini Larter	Boulder	127	43	21
6	Sarah Max	Bend	103	35	22
2	Chelsea Holmes	Truckee	102	23	23
38	Annie Creighton	Hamilton	149	47	24
26	Paula Hudson	Park City	114	43	25
55	Lurah Klatt	Salt Lake City	154	51	26
40	Tanya Swenson	Park City	129	47	27
33	Deb Bauer	Spokane	111	45	28
3	Nicole De Yong	Ketchum	104	28	29
48	Amy McDonald	Salt Lake City	139	48	30
52	Robin Potts	Hailey	145	49	31
30	Beth Thomas	Truckee	137	43	32
29	Rebecca Rusch	Ketchum	140	42	33
53	Kim Kawaguchi	Vancouver	168	49	34
24	Robin McGee	Jackson	121	41	35
20	Becky Bjork	Bend	133	40	36
39	Tricia Swartling	Ketchum	122	45	37
35	Amy Fulwyler	Jackson	142	43	38
84	Karen Brown	Boulder	164	53	39
5	Stephanie Howe	Bend	113	27	40
7	Emma Garrard	Park City	123	29	41

106	Margie LaPoint	Truckee	416	56	42
8	Barbro B. Hatlevik	Salt Lake City	118	28	43
41	Kathleen Crowley	Jackson	173	42	44
68	Margaret Hepworth	Boise	163	48	45
69	Susan Thoreson	Sun Valley	156	49	46
28	India Wysong	Ketchum	135	37	47
95	Hilary Garrett	Bend	469	53	48
194	Marit Glenne	Park City	613	67	49
152	Nancy Fichter	Park City	617	62	50
130	Charlotte Alexander	Sun Valley	434	58	51
32	Jennifer Santoro	Salt Lake City	174	37	52
17	Abbie Harris	Ketchum	124	28	53
46	Jessica Kisiel	Los Alamos	148	42	54
93	Sue Engelmann	Ketchum	448	51	55
18	Tamsen Pruzan	Wilson	134	31	56
11	Katie Bono	Ketchum	106	23	57
49	Karen Oppenheimer	Bend	151	42	58
16	Ashley McQueen	Ketchum	165	26	59
15	Katie Ronsse	Anchorage	105	25	60
56	Darla McRoberts	Boise	141	44	61
50	Kathleen Kretz	Bend	125	42	62
58	Julie Downing	Bend	136	44	63
19	Kate Whitcomb	Ketchum	107	30	64
36	Jessica Jensen	Boise	143	36	65
94	Lori Dolan	Bozeman	855	50	66
111	Katharine Sheldon	Hailey	444	53	67
59	Tizz Miller	Bellevue	157	42	68
114	Brenda Spackman	Ketchum	724	53	69
73	Eva Dewolfe	Ketchum	171	46	70
42	Lisa White	Ogden	147	36	71
64	Tanya Kjeldsberg	Salt Lake City	629	43	72
175	Sally Elliott	McCall	733	62	73
83	Gretchen Flint	Ketchum	445	47	74
112	Kanda Hazelwood	Sandy	406	52	75
147	Carol Mutzel	Sun Valley	658	58	76
79	Carolyn Sterrett	Salt Lake City	167	46	77
170	Sally Simpson	Telluride	417	61	78
161	Janet Conway	Alta	614	60	79
63	Sara Relling	Vancouver	482	41	80
23	Sarah Willis	Bozeman	115	24	81
124	Becky Reitingner	Ketchum	509	53	82
191	Jane Parrish	Winthrop	705	63	83
117	Giggi Burns	Salt Lake City	723	52	84
101	Valerie Kahn	Belgrade	720	49	85
62	Audrey Kalinowski	Bozeman	404	40	86
31	Laura Theis	Ketchum	155	27	87
37	Laurel Douglas	Missoula	150	31	88

215	Sandra Knapp	Bozeman	916	66	89
138	Elizabeth Cody	Boise	665	55	90
78	Jennifer Sparks	Jackson	481	43	91
86	Stephanie Schultz	Bend	486	44	92
43	Haley Cooper-Scott	Spokane	119	30	93
67	Melisa Streubel	Driggs	461	39	94
182	Carolyn Gilbertson	Lander	836	61	95
44	Erica Madison	Anchorage	116	29	96
131	Lisa Ostermiller	McCall	642	52	97
139	Wiggy Brennan	Park City	716	54	98
47	Kristy De Yong	Anchorage	144	31	99
70	Kate Lynch	Victor	162	39	100
122	Kelly Bird	Ketchum	513	50	101
113	Leigh Morse	Hailey	602	48	102
77	Kirsten Kotval	Park City	172	40	103
71	Kristin Wadle	Livingston	695	39	104
148	Gloria Kimball	Ketchum	610	54	105
90	Janelle Connors	Hailey	525	42	106
57	Hannah Young	Ketchum	169	33	107
91	Louise Stumph	Ketchum	535	42	108
108	Lucy Chubb	Ketchum	1025	46	109
45	Laura Valaas	East Wenatchee	130	26	110
110	Marjorie Geier	Boise	1080	46	111
128	Ann Sadler	Boise	427	49	112
87	Cynthia Engel	Bend	161	40	113
176	Louise Forrest	Bozeman	652	57	114
218	Ellen Waterston	Bend	645	64	115
134	Kristen Bell	Ogden	631	50	116
100	Kristin Smith	Boise	520	42	117
179	Victoria Saab	Bozeman	717	57	118
80	Jana Repulski	Boise	463	37	119
75	Berit Campion	Salt Lake City	499	36	120
51	Lexie Praggastis	Sun Valley	511	24	121
66	Trina Benson	Hailey	438	30	122
54	Sally Johnson	Salt Lake City	112	25	123
145	Linda Dunn	Salt Lake City	430	51	124
116	Kimberly Grover	Seeley Lake	672	44	125
168	Nancy Parsons-Brown	Sun Valley	1081	54	126
141	Anita Moore-Nall	Bozeman	523	50	127
153	Laurel Smith	Boise	653	52	128
127	Lisa Bruns	Salt Lake City	681	46	129
211	Cheryl Chadwick	Clayton	909	60	130
105	Michelle Tullis	Boise	628	41	131
166	Alexandra Sundali	Ketchum	1062	53	132
149	Kristen Jarvis	Fall City	661	50	133
193	Carol Troutner	McCall	833	57	134
228	Carol Monteverde	Ketchum	803	64	135

144	Lucy Bourret	Ketchum	735	49	136
109	Barbara Kreisle	Boise	457	41	137
82	Cortney Vandenburg	Hailey	158	33	138
162	Sally Russell	Bend	657	52	139
72	Naomi Goldberg	Ketchum	898	30	140
119	Mindy Gaddis	Boise	702	43	141
98	Angelina Salerno	Bend	160	37	142
104	Amy Harvey	McCall	408	39	143
159	Becky Schoening	Woodinville	1011	51	144
155	Millie Reidy	Sun Valley	1113	50	145
74	Anna-Lisette Davis	Driggs	650	28	146
81	Kathryn McNeal	Ketchum	675	30	147
115	Kari Wier	Garden Valley	641	40	148
89	Heather Clark	Bend	452	32	149
142	Jan Terhaar	Sisters	873	47	150
146	Alison Scott	Spokane	669	47	151
123	Andean Lucas	Missoula	823	41	152
137	Karen Heiden	Park City	480	45	153
121	Heidi Standteiner	Salt Lake City	896	40	154
99	Emma Maaranen	Salt Lake City	920	33	155
125	Pavla Clouser	McCall	522	40	156
165	Diane Ruschke	Salt Lake City	638	49	157
171	Nina Helm	Alta	605	50	158
195	Dawn Bowling	Park City	687	54	159
160	Sheri Weichel	West Vancouver	812	48	160
118	Alison Forney- Gorman	Missoula	531	38	161
126	Stacey Collett	Salt Lake City	496	38	162
253	Joanne Davis	Sun Valley	868	74	163
214	Joanne Richter	Bend	837	56	164
129	Tracey Holderman	Boulder	819	39	165
169	Lisa Mary	Bellevue	1119	48	166
150	Margaret Moore	Salt Lake City	410	45	167
96	Kat Carr	Boulder	175	26	168
133	Tory Canfield	Ketchum	691	40	169
163	Kathy Lee	Boise	700	46	170
103	Sara Wolf	McCall	501	29	171
186	Joney Otteson	Ketchum	810	50	172
97	Rebecca Kurnick	Bozeman	442	22	173
102	Marisa Sowles	Hamilton	466	27	174
143	Alisa Bondurant	Boise	649	41	175
240	Mimi Hogan	Anchorage	646	64	176
164	Jo Warden	Victor	714	45	177
183	Karin Lindholm	Boise	802	49	178
187	Shannon Mara	Bend	673	49	179
190	Tunde Zsido	Logan	926	49	180
237	Deidra Groth	Salt Lake City	904	62	181

217	Mary Barry	Colorado Springs	1035	54	182
151	Alyssa Reischauer	Bend	698	41	183
154	Marla Covey	Boise	696	41	184
223	Paula Loboschefskey	Park City	680	56	185
174	Michelle Hurty	Boise	659	44	186
210	Linda de Jong	Salt Lake City	877	51	187
231	Francette Labatut	Sun Valley	623	57	188
157	Stacy Beeson	Boise	883	40	189
199	Maribeth Standley	Meridian	1005	48	190
189	Michelle Bradshaw	Salt Lake City	825	45	191
120	Gail Garfield	Salt Lake City	606	20	192
181	Kristina Kind	Ketchum	1124	43	193
132	Mollie Parker	Ketchum	676	25	194
203	Elaine Daniel	Boise	887	47	195
135	Katherine Bridwell	Hailey	1075	28	196
196	Kathy Berman	Ketchum	881	45	197
167	Christine Davis-Jeffers	Ketchum	721	38	198
201	Peggy Fisher	Redmond	911	45	199
178	Courtney Gilbert	Hailey	736	40	200
156	Erica Feider	Boise	664	34	201
158	Sarah Barber	Boise	1073	34	202
136	Kelly Grove	Missoula	805	23	203
192	Chris Johnson	Spokane	668	42	204
173	Katherine Rixon	Ketchum	666	37	205
197	Renee Perin	Ketchum	870	42	206
198	Kim Young	Bend	447	42	207
184	Cheryl Cramer	Boise	1069	39	208
185	Cygnia Rapp	Hailey	674	39	209
177	Jodi Emery	Salt Lake City	1028	35	210
180	Karla Eitel	McCall	704	37	211
206	Kirsten Ritzau	Hailey	1086	43	212
222	Karri Hays-Walzer	Park City	851	49	213
207	Kristina Erwin Mitchell	Boise	913	42	214
221	Sara Studt	Bend	906	48	215
216	Cary Schwarz	Bend	1090	44	216
246	Liz Fitzgerald	Boise	1008	57	217
212	Jennifer Fisher	Seattle	917	42	218
205	Cynthia Smidt	Bend	439	40	219
172	Kelsey Kelley	Bend	879	28	220
208	Anna Martin	Boise	1066	40	221
204	Stacey Galinat	Boise	1085	39	222
213	Veronique Forgeat	Ketchum	1118	41	223
188	Olympia Nuttall	Ketchum	885	32	224
224	Penny Beach	Boise	654	45	225
230	Michel Dykstra	Boise	1120	46	226
235	Mary Harter	Bozeman	527	50	227

202	Jenny Haynes	Ketchum	841	34	228
234	Cheryl Charlton	Caldwell	922	49	229
249	Joni Cashman	Sun Valley	679	56	230
236	Karen Heerensperger	Seattle	1023	49	231
225	Kira M. Slawson	Salt Lake City	890	43	232
248	Karen Bossick	Ketchum	1115	55	233
219	Ann Brisk	Salt Lake City	899	40	234
247	Gloria Gunter	Bellevue	1020	54	235
209	Sandy Jocoy	Boise	1072	33	236
266	Shauna Thoreson	Ketchum	1032	76	237
232	Julie Freestone	Park City	1070	43	238
242	Susanne Miller	Salt Lake City	835	49	239
229	Mary Carroll	Bend	618	41	240
227	Cristina Linden	Vancouver	1096	40	241
260	Joann Levy	Sun Valley	1003	70	242
200	Kirsten Valaas	Wenatchee	1071	19	243
243	Laurie Breedveld	Hailey	925	48	244
250	Mollie Weinberg	Boise	900	55	245
238	E.M. von der Heyden	Ketchum	1114	45	246
261	Nancy Lockspeiser	Denver	850	69	247
233	Merideth C. Chaudoir	Donnelly	1098	39	248
244	Sue McMillan	Boise	842	46	249
258	Diana Wadsack	Ketchum	1034	63	250
220	Hannah Barta	Boise	1043	18	251
239	Jenny Emery-Davidson	Hailey	1076	38	252
241	Christy Haines	Boise	1009	39	253
226	Erin Sours	Boise	684	22	254
252	Deb Cornwall		1045	53	255
254	Cynthia Woolley Kearns	Ketchum	1049	52	256
255	Brigitte Morris	Bozeman	690	51	257
245	Cindy Dondero	Ketchum	1112	31	258
257	Cori Groth	Salt Lake City	1058	40	259
256	Erin Finnegan	Ketchum	662	37	260
251	Sarah Wilcox	Tacoma	854	27	261
259	Sara Ward	Boise	620	43	262
263	Nancy Alpers	Seattle	1021	55	263
268	Gloria Ploss	Santa Cruz	1002	65	264
264	Kathleen Moore	Bend	1046	48	265
265	Marka Waechter	Seattle	1052	48	266
262	Susan Walsh	Portland	1107	44	267
269	Dottie Lee	Napa	1015	65	268
267	Kathy Ogilvie	Ketchum	1019	48	269
270	Wendi Norris	Boise	1004	44	270