

# **Determination of an appropriate age allowance for the Euro Speed Test**

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## **Introduction**

Most sports including FIS skiing recognise master's competition categories. It is generally recognised that performance declines with age. In professional sports such as football there are very few athletes over 35 still active within the top professional leagues. Within ski racing in each of the past three seasons the average age for skiers reaching the podium in World Cup events has been 28 (male) and 26 (female)<sup>1</sup>. Since 1970 the oldest winner in a WC giant slalom event was 35 (male) and 32 (female)<sup>2</sup>. BASI have had only a small number of candidates over the age of 40 pass the Eurotest over the past ten years.

Clearly skiing performance declines with age and the Euro Speed test should be age handicapped to ensure that all instructors irrespective of age, gender or disability are given an appropriate allowance. It is arguable that to comply with EU and UK anti-discrimination legislation an age allowance in addition to the current gender allowance must be included in a test.

To determine what a fair and equitable allowance should be, historical records for master's athletics and international chess championships were reviewed along with current handicapping data from the long running NASTAR GS ski race series in the USA plus GS race test handicaps used in Australia and Sweden. From the data it is very clear that there is a quantifiable decline in performance in ski racing with age as per other sports. Although ski racing is not directly comparable to other athletics events the closest fit in my view is the 400M hurdles which is an anaerobic power sport roughly the same duration and has a similar level of skill, coordination, timing and rhythm as in GS racing and has the advantage of decades of data. A GS ski race has additional variables such as weather, snow conditions, terrain, etc so it could be argued that the allowance should be higher than for a hurdle race.

## **Key Information**

- Age handicaps are currently being utilized in GS race tests that form part of ski instructor certification in the USA, Australia and Sweden.
- Male GS NASTAR racers within the elite top 5% group of national competitors an age handicap of 4% at 40, 6% 50 and 8% at 60 years of age has been determined by officials to equalize competitors across all age groups<sup>3</sup>.
- Male 400M hurdle world record times decline by 9% at 40, 24% at 50, and 31% at 60 years of age. Records shows that top 8 finishes at international events decline at roughly the same percentages as world records taking into account exceptional athletes.
- Even in completely non-physical competition (international competitive chess) performance declines at 1% at 40, 3% 50 and 5% at 60 years of age.
- Women's times at all distances and all ages are approximately 11% slower than men within athletics events. The Eurotest currently gives female competitors a 33% allowance compared to men (24% vs 18%).

## **Conclusion**

After detailed review of all available data and current practice in other countries a recommendation for a fair, proportionate and equitable age allowance for the Eurotest would be to apply a reduction of 0.3% per year from the age of 35 for both male and female competitors.

## Precedents

Precedents exist for age handicapping within ski racing and instructor certification.

The USA ski instructor association PSIA Rocky Mountain division has a race element within their certification process utilizing results from the NASTAR race league<sup>4</sup>.

The Nastar races are run nationally and are handicapped not only by Gender but also an allowance has been determined for Age, Disability and Discipline. Results from races place the competitors into divisions. Race pass times are determined by pacesetters in a manner very similar to the Eurotest and all national pacesetters coefficients are calibrated annually against a world class competitor<sup>5</sup>. At Level III (the PSIA top level) you must be a Nastar "Gold division" standard which is a race time roughly skiing to within 15% of the current fastest GS racer in the world (FIS 0 points).

Although the PSIA only require a Gold division result in a Nastar race I also reviewed handicap allowances determined for the "Platinum division" standard of skiers which is the top 5% of all competitors nationwide and is much more stringent than the PSIA's top level III certification requirements. The Platinum division is for results within 8% of a FIS 0 reference skier as opposed to the Eurotest's 18% time adder. Reviewing the more difficult platinum handicap is useful as the NASTAR races are not on FIS homologated slopes, are roughly half the duration and number of gates than a Eurotest; and, the competitors are the fittest and fastest athletes. As the courses are not as difficult as a typical Eurotest the reference skiers are not able to create as large a gap in times between them and the competitors but the age allowance determined is very relevant.

A Nastar handicap chart is produced each season after compiling all race results<sup>6</sup>. A handicap by five year age brackets is produced for each "division". The Platinum division is the top 5% of all national race attendees (currently within 8% of FIS 0 points) and the Gold division is the top 20% (currently within 15% of FIS 0 Points). Interesting to note is that although the PSIA require their top level instructors to achieve a Gold result all racers are given an age handicap but should the candidate be disabled a second additional allowance is granted for their disability. Although not part of this review an equitable allowance for disability should be investigated for the Eurotest.

**Australia** has a GS test for their top level of certification at Level 4. The male pass time is set to within 7% of pacesetters times (females 12%) Pacesetters are typically selected from senior instructor examiners, with no race suits allowed on courses of up to 30 gates<sup>7</sup>. An additional 2% age allowance is applied for candidates thirty five years and older. Extrapolating this level of allowance to the Eurotest percentages the extra 2% would equate to an age allowance factor of 9%/7% for men which increases the pass percentage by 1.29 times and would produce an equivalent Eurotest handicap for 35 year old males of 23% (18%\*1.29) an allowance equivalent to adding 5.1% to the male Eurotest pass time. For female competitors this factor is effectively reduced (14/12 or a factor of 1.17) creating an equivalent Eurotest handicap for 35 year females of 28% (24%\*1.17)

In **Sweden** they utilize the ISIA GS technical test as part of their top level certification process. The ISIA technical test is very similar to the Eurotest in terms of the standard of the pacesetters and is run on FIS homologated slopes. The pass percentage is not reference against FIS 0 but rather to within a percentage of the pacesetters times. The male pass percentage is within 12.5% and female is 17.5% to within the pacesetters times. The passing standard of the ISIA test is arguably slightly easier than the Eurotest but the technical level of skiing required is very close. The Swedish association has applied an age allowance of 0.5% per year over 35 years old against these percentages and one instructor candidate was 62 years old and was granted an allowance of 13.5% in addition to the normal male pass percentage of 12.5% which gave him a

total of 26%. The data I reviewed would indicate that this is potentially an excessive allowance if the intention is to create a similar pass standard for all ages taking the Eurotest but is a system that is currently in use in an EU member state.

A report by David Murrie<sup>8</sup>, a noted sports science lecturer and BASI instructor has done a similar review and estimated that an equitable age allowances for the EuroTest could be:

	Male	Female
Current	18%	24%
35-39	18%	25%
40-44	19%	26%
45-49	20%	28%
50-54	22%	30%
55-59	24%	N/A

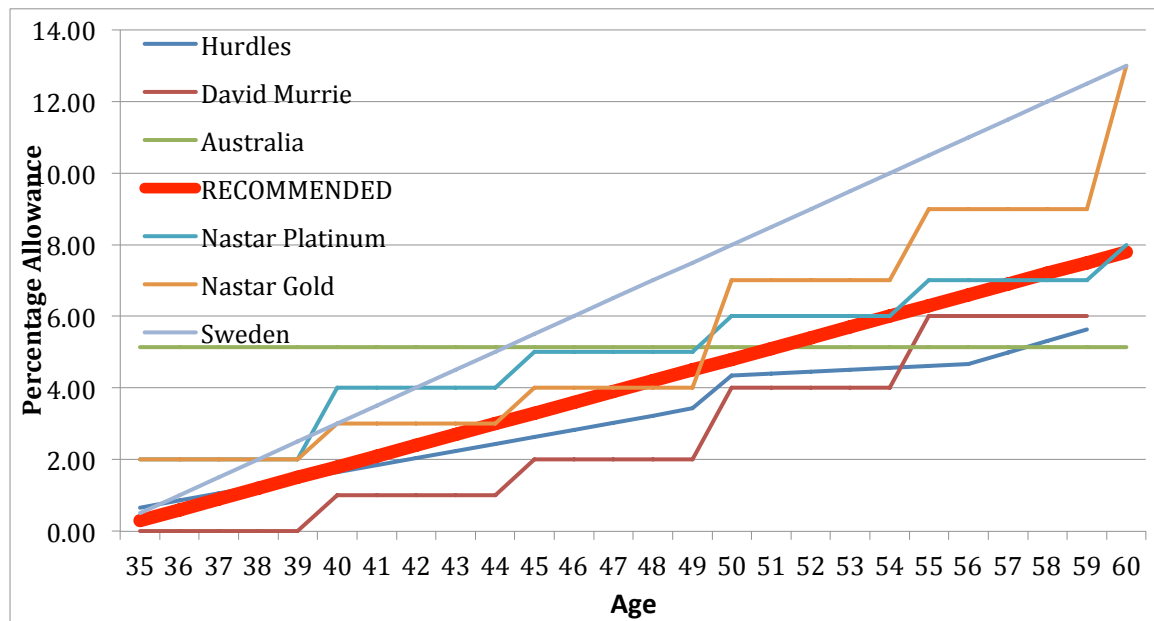
For males over 60 and females over 55 David feels that there should be no requirement to take the speed test. There is a sharp decline in performance over this age and bone/muscle density reduces rapidly for people over that age. For instructors of this age without a competitive racing background there is an argument that a mandatory race would carry a higher than acceptable risk of injury. It could be argued that similar to Eurotest FIS point exemptions (which have a five year time limit) that any candidate who competed in a Eurotest within the past five years should be exempt after the age of 60. It has been reported that French and British candidates over the age of 35 were exempt from the Eurotest when it was introduced in 2004.

### **Data Analysis and Determination of Eurotest Allowance**

Although FIS Masters ski racing categories start at the age of thirty ski racing is a late development sport. After review of all the data from multiple sports including ski racing only a very minimal allowance is indicated for the 30-34 year old age bracket. In my opinion the facts clearly support that an allowance should be applied from the age of 35 whereas there is some doubt in the validity of a handicap for 30 year olds.

Collating data from the reduction in performance in athletics, competitive chess, Nastar ski racing and applying the reduction to the EuroTest pass percentages the following charts and tables summarise all the available information.

## Data Chart for Male Age Allowance



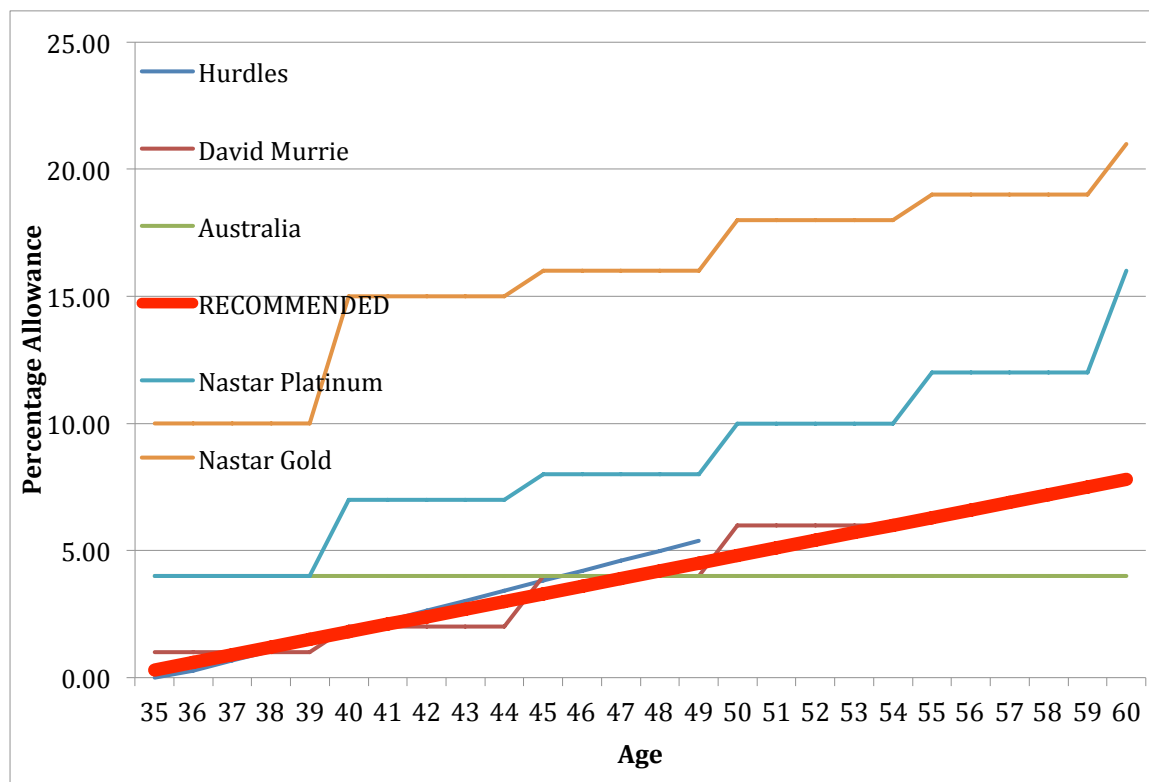
## Data Table by Male age groups

	35	40	45	50	55	60
1. Age handicap allowance assuming same decline in performance as in 400M men's hurdles.	0.66	1.65	2.64	4.35	4.62	
2. David Murrie Paper	0.00	1.00	2.00	4.00	6.00	
3. Australian GS test allowance	5.14	5.14	5.14	5.14	5.14	5.14
<b>4. Recommended allowance of 0.3% from 35</b>	<b>0.30</b>	<b>1.80</b>	<b>3.30</b>	<b>4.80</b>	<b>6.30</b>	<b>7.80</b>
5. % adder Nastar GS race Platinum Division Male	2.00	4.00	5.00	6.00	7.00	8.00
6. % adder Nastar GS race Gold Division Male	2.00	3.00	4.00	7.00	9.00	13.00
7. Swedish GS test allowance	0.50	3.00	5.50	8.00	10.50	13.00

As can be seen from the table and graph the recommended allowance is broadly in the middle of current GS age allowances in Australia, Sweden and the USA Nastar GS race series as well as being in line with the review of age handicap in the men's 400 M hurdle a similar but non skiing event.

For Female competitors the age decline is higher for older competitors in Nastar events however the additional base time allowance for the Eurotest of 24% precludes a higher per year adder for females.

### Data Chart for Female Age Allowance



### Data Table by Female age groups

	35	40	45	50	55	60
1. Age handicap allowance assuming same decline in performance as in 400M women's hurdles.		1.85	3.82			
2. David Murrie Paper	1.00	2.00	4.00	6.00		
3. Australian GS test allowance	4.00	4.00	4.00	4.00	4.00	4.00
<b>4. Recommended allowance of 0.3% from 35</b>	<b>0.30</b>	<b>1.80</b>	<b>3.30</b>	<b>4.80</b>	<b>6.30</b>	<b>7.80</b>
5. % adder Nastar GS race Platinum Division Female	4.00	7.00	8.00	10.00	12.00	16.00
6. % adder Nastar GS race Gold Division Female	10.00	15.00	16.00	18.00	19.00	21.00

### EuroTest age allowance in practice

Rather than adding a percentage by five year age bracket as is done in the USA it is recommended that a percentage adder be applied for each year of age as per tests run in Sweden. The Eurotest base time can be calculated as is currently done and then an age allowance added per year of age over 34. For example two opening and closing times are recorded and the FIS 0 Base Time determined.

Then the pass time is calculated by Base Time x 1.18 for men and Base Time x 1.24 for women under 35.

For men 35 and over the time is calculated as Base Time x (1.18 + (age - 34) \* 0.003)

For women 35 and over the time is calculated as Base Time x (1.24 + (age - 34) \* 0.003)

## Sources referenced

1. [http://www.ski-db.com/db/stats/mgeneral\\_age.asp#.Uc\\_2PT46U1E](http://www.ski-db.com/db/stats/mgeneral_age.asp#.Uc_2PT46U1E)

2. [http://www.ski-db.com/db/stats/WC\\_m\\_age.asp#.Uc\\_zxD46U1E](http://www.ski-db.com/db/stats/WC_m_age.asp#.Uc_zxD46U1E)

3. <http://www.nastar.com/articles/pacesetting>

4. <http://www.psia-rm.org/education/alpine/certification-pathway>

5. <http://www.nastar.com/articles/what-is-a-nastar-handicap>

6. link to Handicap Chart

<https://dl.dropboxusercontent.com/u/10457370/HCP%20Chart%202014-15.jpg>

7. see page 6 of

[http://www.apsi.net.au/media/5272/apsi\\_alpine\\_lvl\\_4\\_training\\_exam\\_guide\\_2014.pdf](http://www.apsi.net.au/media/5272/apsi_alpine_lvl_4_training_exam_guide_2014.pdf)

8. Source: <https://sites.google.com/site/davemurriesportsscience/about-my-books/dave-murrie-s-articles>

<https://docs.google.com/viewer?a=v&pid=sites&srcid=ZGVmYXVsdGRvbWFpbnxkYXZlbXVycmlc3BvcnRzc2NpZW5jZXxneDo1NTc4ZjExZWY2Yml5ODQ4>

9. Spreadsheet data analysis and charts

<https://www.dropbox.com/s/ahbuc6dtfz0h4o0/EurotestAgeDeclineData.xlsx?dl=0>