

Dosage, past and present

The origins of dosage and what it means

FOR YEARS, dosage has represented one of the most popular methods of pedigree evaluation. In brief terms, it calculates a horse's distance potential based on certain stallions that show up in the first four generations of its pedigree. Although not universally embraced, the ideas behind dosage have long fascinated students of bloodlines.

Lt. Col. J. J. Vuillier first came up with the concept of dosage early last century. After studying pedigrees of European classic horses, he

discovered that while most names appeared only fleetingly, a few stallions (and one mare, Pocahontas) showed up repeatedly. These influential individuals would eventually be referred to as "*chefs-de-race*"—"chiefs of the breed." Vuillier thereafter centered his analysis around the percentage of genetic influence of those elite few on a pedigree.

Dr. Francesco Varola subsequently added aptitudinal analysis to the concept—that is, he considered what characteristics given *chefs*



LT. COL. J. J. VUILLIER
The father of dosage

tended to contribute to the breed. From this, he created aptitudinal classes, ranging from brilliant to professional, in which he categorized each *chef-de-race*. By figuring the number of *chefs* in a pedigree that fell into each category, Varola developed individualized dosage diagrams. Calculations were made over an unspecified number of generations, each of which was given equal weight.

Beginning in the 1970s, Steven Roman, Ph.D., refined dosage further. He limited analysis to the first four gen-

erations, based on Galton's Law—the premise that the closer up an individual is in a pedigree, the more influence that individual will have. Accordingly, Roman assigned point values to the *chefs*, dependent upon in what generation they occurred. First-generation *chefs* were allotted 16 points; second-generation *chefs*, eight points; third, four points; and fourth, two points. If a stallion fell in two categories (as many do in Roman's system), the points were evenly split.

Roman also transformed Varola's aptitudinal classes, eliminating transbrilliant and rough, and redefined the categories in terms of relative stamina, a concept not in keeping with Varola's patented model. The categories widely used today are: brilliant, intermediate, classic, solid, and professional—representing extreme speed to extreme stamina.

Dosage profile

A Roman dosage profile (DP) is derived from the points of *chefs* found in four generations of a pedigree and where they fall on the aptitudinal chart. Fusaichi Pegasus's DP, for example, is 22-10-24-0-0.

Since breeding has changed in the past century to emphasize speed over stamina (particularly in America), modern pedigrees are likely to lean toward brilliant to classic, as does that of Fusaichi Pegasus. One would be hard-pressed today to find top runners without at least some brilliant or intermediate influence in their pedigrees—as was the case with Man o' War (0-0-4-12-8) and 1930s champions Discovery (0-0-0-4-6), Gallant Fox (0-0-16-8-4), and Challedon (0-0-16-4-2). Presently, the reverse is true: One is more likely to find minimal to nonexistent influence from the professional end, as with 2002 Horse of the

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STAGE DOOR JOHNNY

A rare American solid/professional influence

Year Azeri (9-2-9-0-0), champion Lemon Drop Kid (13-4-29-8-0), and leading sires Storm Cat (11-8-10-1-0) and Sadler's Wells (12-8-22-0-0).

Dosage index

The dosage index (DI) is derived from the profile to reflect the ratio of speed to stamina in a pedigree. This is calculated by adding points from the two speed categories (brilliant and intermediate) plus half of those from the classic (middle) category, and dividing that total by the points from the two stamina categories (solid and professional), plus the other half of the classic points. The higher the DI, the more speed is supposedly present in the pedigree. Average North American DI is 2.85—thus, Azeri's DI of 3.44 indicates she has somewhat less stamina in her pedigree than average. A 4.00 DI is generally the cut-off, over which a horse is considered not likely to get the American classic distance of 1½ miles.

Center of distribution

Center of distribution (CD) is a more com-

plicated calculation derived from the profile. Theoretically, as with DI, the higher the CD, the lower a horse's distance potential. Average CD in this country is +.70. Apple Tree (Fr)—winner of three 1½-mile Grade 1 or Group 1 events in three countries in 1993-1994—had a CD of -.20. Man o' War apparently could have run all day and into the night with a -1.17 CD. Conversely, Secretariat's CD of +.90 was above average—yet he was arguably the most eminently capable runner at up to 1½ miles that this country has seen in years.

As with almost any man-made, theoretical tool, caution must be taken. The late author-breeder Abram Hewitt, who embraced dosage, issued a warning years ago when he wrote: "By definition, dosage studies are restricted to 'chefs-de-race,' and all other mares and sires are excluded from consideration. Some of these exclusions may play an important part in the inheritance of an animal ... and excluding them could prove in some cases misleading. To this extent, handling dosage becomes as much an art as it does a science."

—Mary Simon

Chef-de-race sires

BRILLIANT

Abernant	*Bull Dog	*Grey Dawn II†	In Reality†	Nearco†	Phalaris	*Royal Charger	Ultimus
Apalachee	Carson City†	Grey Sovereign	Intentionally†	Never Bend†	Pharis	Seattle Slew†	Unbridled†
Baldski†	Cicero	Habitat	Key to the Mint†	*Noholme II†	Pompey	Sharpen Up (GB)†	What a Pleasure
Black Toney†	*Court Martial	Halo†	King's Bishop†	Northern Dancer†	Raise a Native	Sir Cosmo	
Blushing Groom (Fr)†	Double Jay	*Heliopolis	Lost Code†	Olympia	Reviewer†	Speak John†	
Bold Ruler†	Fair Trial	Hoist the Flag†	Mr. Prospector†	Orby	Roman†	Spy Song	
British Empire	Fairway	Hyperion†	*My Babu	Panorama	Rough'n Tumble†	*Tudor Minstrel	
Buckaroo†	*Gallant Man†	Icecapade†	*Nasrullah	Peter Pan	Royal Academy†	*Turn-to†	

INTERMEDIATE

Ack Ack†	Bold Ruler†	Colorado	Fappiano†	*Khaled	Petition	Secretariat†	The Tetrarch
A.P. Indy†	Broad Brush†	Congreve	Full Sail	King Salmon	Pharos	Sir Gaylord†	Tom Fool†
Baldski†	Broomstick	Damascus†	*Gallant Man†	King's Bishop†	Pleasant Colony	Sir Ivor†	Traghetto
Ben Brush	Buckaroo†	Danzig†	*Grey Dawn II†	Lost Code†	Polynesian	Smart Strike†	*Turn-to†
Big Game	Caro (Ire)†	Djebel	Havresac II	*Mahmoud†	*Princequillo†	Speak John†	T. V. Lark
Black Toney†	Carson City†	Dr. Fager	Hoist the Flag†	Nashua†	Riverman†	Star Kingdom†	Unbridled†
Bold Bidder†	Chief's Crown†	Eight Thirty	Indian Ridge	Native Dancer†	Roman†	*Star Shoot	
Bold Ruckus†	Codex†	Equipoise†	Intentionally†	Never Bend†	Royal Academy†	Sweep	

CLASSIC

Ack Ack†	Brantome	Fappiano†	In Reality†	Native Dancer†	Prince Bio	Seattle Slew†	Tom Fool†
*Alibhai	Broad Brush†	*Forli	In the Wings (GB)†	Navarro	Prince Chevalier	Secretariat†	Tom Rolfe†
Alydar	Buckpasser	Gainsborough	Key to the Mint†	Nearco†	Prince John	Sharpen Up (GB)†	Tourbillon†
A.P. Indy†	Bull Lea	Giant's Causeway	Kingmambo†	Never Say Die	Prince Rose	Shirley Heights†	Tracery
Aureole	Caro (Ire)†	Graustark†	Luthier	Nijinsky II†	Promised Land	Sicambre	*Vaguely Noble†
*Bahram	Clarissimus	Gundomar	Lyphard	Niniski†	Rainbow Quest†	Sideral	Vieux Manoir
Best Turn	Codex†	Hail to Reason	*Mahmoud†	Nodouble†	Reviewer†	*Sir Gallahad III	War Admiral
Blandford	Count Fleet	Halo†	Midstream	*Noholme II†	*Ribot†	Sir Gaylord†	
*Blenheim II†	Creme dela Creme†	*Herbager†	Mill Reef†	Northern Dancer†	Riverman†	Sir Ivor†	
Blue Larkspur	Damascus†	High Top	Monsun†	Nureyev	Roberto	Smart Strike†	
Blushing Groom (Fr)†	Danzig†	His Majesty	Mossborough	Persian Gulf	*Rock Sand†	Star Kingdom†	
Bold Bidder†	Equipoise†	Hyperion†	Mr. Prospector†	Pilate	Rough'n Tumble†	Swynford	
Bold Ruckus†	Exclusive Native	Icecapade†	Nashua†	Pretense	Sadler's Wells†	Ticino†	

SOLID

Asterus	Busted	Fair Play†	Man o' War	Pia Star	Right Royal	Stage Door Johnny†	Vatout
Bachelor's Double	Chaucer	Graustark†	Mill Reef†	*Princequillo†	*Rock Sand†	Sunstar	*Worden
*Ballymoss	Chief's Crown†	*Herbager†	Monsun†	Rainbow Quest†	Round Table	Tantieme	
*Blenheim II†	Creme dela Creme†	In the Wings (GB)†	Nijinsky II†	Reliance II†	Sadler's Wells†	*Teddy	
Bois Roussel	Discovery	Kingmambo†	Oleander	Relko	*Sea-Bird	Ticino†	

PROFESSIONAL

Admiral Drake	Bruleur	Ela-Mana-Mou	*Le Fabuleux	*Ortello	Run the Gantlet	Spearmint	*Vaguely Noble†
Alcantara II	Chateau Bouscaut	Fair Play†	Massine	Precipitation	Sardanapale	Stage Door Johnny†	Vandale
Alizier	Crepello	Foxbridge	Mieuxce	Rabelais	Shirley Heights†	Sunny Boy	Vatellor
Alycidon	Dark Ronald	Hurry On	Niniski†	Reliance II†	Solario	Tom Rolfe†	Wild Risk
Bayardo	Donatello II	La Farina	Nodouble†	*Ribot†	Son-in-Law	Tourbillon†	

NOTE: A dagger following a sire's name indicates he has been placed in two separate aptitudinal classes. Therefore, his influence in any generation is divided equally between those two classes. The sire classifications were made by Steven Roman.