

HIP DYSPLASIA SCORING IN THE CLUMBER SPANIEL: To 18.12.1992

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INTRODUCTION

Hip dysplasia (HD) was first reported in the dog in 1935 in an American journal. Little publicity was given to the subject until the 1950s when it was widely reported on in USA. Serious research began in the next decade and schemes to combat HD were set up in Scandinavia towards the end of the 1950s. An abortive scheme in Britain under the auspices of the GSD League was started in 1961 but abandoned in 1965 when the BVA/KC scheme began. The American OFA scheme began in 1967 and Germany and other countries also started around this time. The BVA/KC scheme worked on a three category system (Certificate/Letter/Fail corresponding to Normal/Near Normal/Failure) whereas most other countries used more categories. At its best the BVA/KC scheme rarely exceeded 400 submissions of all breeds in any year. It was thus of minimal value to any breed. In 1978 the author, acting for the then GSD Improvement Foundation, approached the BVA to introduce another scheme. Scoring as we now know it was started for GSD in mid 1978 following the idea of Prof Lawson, the chief scrutineer of the BVA panel. A few numerically small breeds were added in the next two years and by late 1983 the old BVA/KC scheme was abandoned in favour of scoring for all breeds.

The scoring scheme looks at 9 radiographic features of the hip using a scale from 0(ideal) to 6 (worst) [in one case the maximum is 5] which means that a dog can score from 0 to 53 per hip or from 0 to 106 for both hips combined. A panel of two radiographic diplomates from a panel of about 9 do the readings which are held about four times per month, scoring around 150 dogs per session. The scheme was also adopted in Australia by Prof. R.S.Wyburn (Murdoch University - WA) and this now forms the Australian Veterinary Association (AVA) scheme, results of which come to the author. In addition the GSD Council of Australia (GSDCA) uses scoring with Dr R. Lavelle at Melbourne University and his data also reach the author. More recently the New Zealand Veterinary Association (NZVA) has begun scoring and their data also reach the author for analysis. At the time of writing 83,779 dogs of 91 breeds have been assessed. This report looks at the Clumber Spaniel and covers all data up to and including the readings of

18.12.1992. This was the last reading of 1992.

Further information on hips can be obtained from Morgan & Stephens (1985) and Willis (1989, 1991, 1992). Factors influencing HD are dealt with in these books.

INHERITANCE of HIP DYSPLASIA

US data suggest quite clearly that HD is an inherited trait controlled by several genes. Inheritance factors are around 25% for most US data but Scandinavian figures are higher in some breeds (closer to 40%). British figures indicate that the Rottweiler, Newfoundland and GSD have a heritability close to 40% for total score but closer to 25% on the old three class BVA/KC categories. Golden and Labrador retrievers show figures of 23 and 29% respectively with this dropping to the mid teens for the old BVA/KC system. Conclusively there are better inheritance figures from scoring than the old system and it appears as if schemes using 12 month minimum ages may be more heritable than those using 24 months as a consequence of greater preselection in the latter. All schemes have some degree of preselection but the OFA may have more than most largely because it starts to assess at an older age.

SEX EFFECT

We have examined 317 Clumber Spaniels at the time of writing. The population comprised 120 males (38%) and 197 females (62%), which split is similar to the one third/two thirds split seen in most other breeds and possibly reflects a higher percentage of females in breeding kennels. The average scores were 42.40 for males and 46.07 for females with an overall average of 44.68. In most breeds there is a slightly higher score for females which is apparent also in this sample. In man there is also a higher risk of HD among female children than males.

The Clumber Spaniel is in 1st place as the worst of out of the 70 breeds with at least 40 animals scored. It is followed by the Otterhound with a mean of 41.46 from 83 animals. In numbers scored the Clumber is in 26th place with the most scoring being from the numerical stronger GSD where 24,119 have been assessed.

AUSTRALIASIAN v BRITISH

Only 12 animals have been scored in Australia/New Zealand. The 12 ranged from 7 to 63 in total score with a mean of 31.33.

This is considerably below the 305 British scored animals which averaged 45.21. This may reflect a better status in Australasia or more selective scoring or a tendency to score lower which is seen in most breeds. However the number of submissions is too small to be meaningful and data are pooled across country in future tables. Data for Australasian dogs could be produced separately if numbers warranted.

AGE EFFECT

Age categories are shown in Table 1. These are broad categories and illustrate that some 66% of the animals are scored in their second year of life though the average age at submission is over 28 months. Trends are towards a gradual increase until we reach dogs over 60 months when numbers are too small to be meaningful. In numerically large breeds the effect of age is about 0.12 to 0.17 points increase in score per month of life. In the Clumber the effect seems to be closer to 0.5 points per month of age. However, if breeders are using the scheme sensibly dogs would be scored prior to breeding so most animals would expect to be scored in their second year of life.

Table 1. Effect of age groupings on total score

Age range (months)	Number seen	Mean score (both hips)	Percent of total
12 - 23	210	41.72	66.2
24 - 35	60	49.45	18.9
36 - 47	35	52.97	11.0
48 - 59	6	59.17	1.9
60 -108	6	37.55	1.9

COOPERATING KENNELS

Dogs are coded by the affix they carry. An affix coming before or after the name is allocated equally but only one affix is used, namely that first allocated to the dog. Note that presence of an affix simply indicates that dogs of this name have been scored. It does not follow that they were scored by the affix owner or even that the affix owner scores at all though some obviously will do. Data for those affixes with at least 3 animals scored are listed in Table 2.

The relative paucity of animals from any affix makes interpretation difficult. Any breeder failing to score a

reasonable proportion of his produce or failing to score breeding animals has to be working in a state of ignorance as regards HD which is undoubtedly a serious problem in this breed. Only three affixes have scored in excess of 10 dogs and 12% of the total dogs scored bear the Leybel affix. Many Clumber breeders would seem to be working with unscored stock.

Table 2. Affixes with at least 3 dogs scored

No.	Affix
38	Leybel
28	Raycroft
18	Topjoys
12	Venaticus
9	Darnacan, Oakring
8	Belcrum, Tavirosh, Trevabyn
7	Cheahnwood, Galadhrim
5	Clauvaden, Erinveine(NZ), Glyncroft, Marshmarks, Tioga
4	Andchelle, Barclaydoans, Dorrobeth
3	Anchorfield, Clubow, Davigdor, Fayemm, Greencourt, Humberfield, Maladetta, Oxwell, Scarsdale, Scherzando, Taurkel, Whitefields

DIFFERENCES BETWEEN HIPS

It is generally accepted that HD is a bilateral condition i.e. both hips tend to be similar in status. A proportion of the differences between hips may be caused by slight positional errors but some animals do differ markedly between hips. The differences between hips in total score are shown in Table 3.

In most breeds examined in detail some 80% of the population differ by 4 or fewer points between the hips. In the Clumber Spaniel some 80% differ by 6 points or fewer. This confirms the bilateral nature of HD. Large differences between hips may result from trauma or even spinal trouble (as yet perhaps unsuspected). However, some dogs are uneven and may breed unevenly. When evidence of trauma exists the hip score should be used with caution since a 3/26 showing trauma may really be more like a 3/3 than a total of 29. However trauma must not simply be assumed because scores differ on each side.

Table 3. Differences between hip totals (right v left)

Difference (points)	No. seen	Percentage of total	Cumulative percentage
0	65	20.5	20.5
1	67	21.1	41.6
2	44	13.9	55.5
3	30	9.5	65.0
4	13	4.1	69.1
5	23	7.3	76.3
6	16	5.0	81.3
7	8	2.5	83.9
8	4	1.3	85.1
9	6	1.9	87.1
10	7	2.2	89.3
11	4	1.3	90.5
12	5	1.6	92.1
13	4	1.3	93.4
14	4	1.3	94.6
15-18	12	3.8	98.4
22-27	4	1.3	99.7
36	1	0.3	100.0

OLD BVA/KC GRADINGS

All 317 animals were assessed under the old system as well as by scoring. The results appear in Table 4.

Table 4. Old BVA/KC gradings

Category	No.	Percent
Certificate(Normal)	3	0.95
Breeders Letter(Near Normal)	11	3.47
Failure	303	95.58
TOTAL	317	100.00

Around 96% of the breed would have failed the old system illustrating the limitations of that scheme. One cannot discard from breeding 96% of a breed solely on hips. Clearly some dogs that are technically failures have to be used as breeding stock and the scoring scheme allows differentiation between different grades of failure.

DISTRIBUTION OF SCORES

Perhaps the most useful item of information is the breakdown of the population by total hip score. This is given in Table 5 for the 317 dogs.

In most breeds breeders use about 10% of males and about 30% of females to breed at least one litter. Ideally these ought to be the best 10 and 30% respectively for a mixture of characteristics not simply one trait.

In hip terms only about 7% of the breed scores 10 or less and around half score more than 40. A maximum score of 45 would exclude about 44% of the breed while a 50 maximum would exclude about 42% of the breed. Clearly breeders should set limits in the light of the breed average and the status of their own stock.

Table 5. Distribution of hip scores

Score range	Males		Females		Both Sexes		Cum. percent
	No. seen	Percent	No. seen	Percent	No.	Percent	
0 - 5	3	2.5	2	1.0	5	1.58	1.58
6 - 10	7	5.8	10	5.1	17	5.36	6.94
11 - 15	12	10.0	23	11.7	35	11.04	17.98
16 - 20	12	10.0	13	6.6	25	7.89	25.87
21 - 25	6	5.0	16	8.1	22	6.94	32.81
26 - 30	8	6.7	13	6.6	21	6.62	39.43
31 - 35	10	8.3	10	5.1	20	6.31	45.74
36 - 40	9	7.5	12	6.1	21	6.62	52.37
41 - 45	3	2.5	8	4.1	11	3.47	55.84
46 - 50	4	3.3	5	2.5	9	2.84	58.68
51 - 60	11	9.2	13	6.6	24	7.57	66.25
61 - 70	12	10.0	22	11.2	34	10.73	76.97
71 - 80	9	7.5	17	8.6	26	8.20	85.17
81 - 90	10	8.3	24	12.2	34	10.73	95.90
91 -100	3	2.5	9	0.5	12	3.79	99.68
101 -106	1	0.8	0	0.0	1	0.32	100.00
Totals	120	100.0	197	100.0	317	100.00	100.00

There is little to be gained in hip terms by breeding from high scoring stock but equally there is no point in breeding from low scorers which have nothing else to offer. A 0/0 dog

is of little use to any breed if all it has is a good set of hips. In contrast a moderate-hipped dog of excellent type/character may be of value to a breed if used carefully.

Each breeder must set his own upper limits and try to stick to them but if the breed is to progress in hip terms then the lower scoring dogs are the ones to use, other things being equal. There is little justification for using dogs in excess of 40 (total) and breeders should seek to use dogs below 25 whenever feasible and mate compensatorially in hip terms.

YEAR OF BIRTH EFFECTS.

Hip scores were classified by year of birth (not year of submission). The earliest dog was born in 1977 and the data in Table 6 show results by year of birth. Few years have enough animals to be meaningful. Because of small numbers the years 1977 to 1979 and 1980-81 have been pooled. There is no consistent trend over years. Although there may seem to have been a decline in score over the 1988-91 period there are few animals being assessed. There was some tightening of scoring from about 1986 which pushed figures somewhat higher. Readings are probably more accurate now than pre 1986. One would not expect any trend within about 4-5 years of starting the scheme and with so little scoring being done progress will be virtually nil.

Table 6. Mean score by year of birth

Year born	No. seen	Score Range	Mean score
1977-79	7	7 - 96	44.43
1980-81	12	5 - 88	38.33
1982	15	10 - 96	43.73
1983*	20	6 - 102	39.80
1984	36	3 - 88	42.42
1985	25	4 - 94	54.96
1986	31	4 - 99	49.35
1987	34	4 - 97	36.03
1988	49	7 - 100	52.65
1989	36	7 - 95	44.83
1990	33	8 - 93	41.91
1991	19	13 - 78	37.26
Total	317	3 - 102	44.68

* Scheme began for this breed in this year

SIRE TESTING

The most important aspect of selection for hip scoring is progeny testing. In GSD over 450 sires have been tested on at least 9 progeny. Tests on 5 progeny are about as reliable as the dog's own score but on about 10 progeny a test is much more reliable than the dog's own score. This, in turn, would depend upon heritability. On 20 progeny the progeny test is much more reliable than the dog's own result to the point that the dog's own score becomes almost irrelevant. If, on 20+ progeny, a sire is performing badly on hips then he should be so regarded even if he scores 0/0.

Unfortunately the 317 Clumber Spaniels scored stem from 73 different sires, an average of only some 4.34 progeny per sire. Progeny per sire appear in Table 7. Of the 73 sires 33 (45.2%) were themselves scored and these scored sires accounted for 147 (46.4%) of the 317 animals.

Table 7 Progeny per sire

Progeny per sire	Number of such sires+	Total No. progeny#
1	19(8)	19 (8)
2	15(6)	30 (12)
3	6(2)	18 (12)
4	10(4)	40 (16)
5	4(3)	20 (15)
6	2(2)	12 (12)
7	4(3)	28 (21)
8	5(2)	40 (16)
9	3(2)	27 (18)
10	1(0)	10 (0)
11	1(0)	11 (0)
12	1(0)	12 (0)
17	1(1)	17 (17)
33	1(0)	33 (0)
Totals	73(33)	317(147)

+ Number in brackets is number of scored sires

Number in brackets is number of dogs with a scored sire.

Only 8 sires have got 9 or more progeny and their data appear in Table 8. The reference to fairly reliable and less reliable relates to the tests not the sires. Fairly reliable tests will generally show only small changes to progeny averages while those for less reliable tests may show larger fluctuations.

Table 8. Progeny tests of Clumber sires for hip score
 (Fairly reliable tests are based on 20 or more progeny, less reliable tests on 9-19 progeny. * = scored animal)

Feature	<u>Sires with 9 or more progeny scored</u>								
	A A	A A	S B	B C	C S	R S	T A	W G	
	c c	r f	c e	o r	l t	a u	o n	y e	
	r c	t a	o l	s u	u a	y n	l g	d o	
	e l	h l	t c	s s	b r	c n	l u	i r	
	d a	u l	c r	l a	o s	r y	y s	l d	
	a i	r a	h u	y d	w	o	l	l i	
	i m	c	m	n e	&	f J	o M	o e	
	e	o h	M *	r		t i	g o	n	
	t	f	i	*	S	m	h	S	
	o		s		t		r	t	
			t		r		*	a	
	F				i			r	
	a		o		p			r	
	m		f		e			i	
	e				s			n	
								g	

No. progeny	9	10	9	17	12	33	9	11
No. scored dams	3	9	9	17	7	14	0	2
No. diff. dams	6	3	2	6	5	15	5	7
Lowest score	8	4	4	10	8	11	33	20
Highest score	95	88	85	81	86	95	102	56
Progeny mean	51.9	29.0	37.8	43.9	40.5	55.5	70.9	38.9
Dam mean	35.3	20.4	29.0	61.5	42.3	49.4	45.0	49.0
Progeny distribution for total score								
% 0 - 5	0	10	11	0	0	0	0	0
6 - 10	11	10	0	6	17	0	0	0
11 - 20	22	20	22	0	8	9	0	9
21 - 30	0	30	22	18	17	15	0	18
31 - 40	0	10	11	29	17	12	11	36
41 - 50	11	10	0	18	8	3	0	9
51 plus	56	10	33	29	33	61	89	27

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For each sire the number of scored progeny is shown together with the number of these whose dams were scored and the number of different dams. In assessing dam means the actual dam score is used if known and if unknown a value of 45 is used. The percentage of progeny in each score group follows and can be compared with the data in Table 5 for the breed as a whole. Ideally one wants a sire with a large number of progeny scored out of a large number of different dams with a low progeny average and a high percentage of stock in the lower score groups. Data on small numbers must be treated cautiously. A few sires are close to 9 progeny and greater submissions would allow progeny testing of sires while they were still young enough to take advantage of or avoid. If breeders want to see their sire tested they should encourage the submission of progeny (of whatever kind). The pet dog is as useful as the show dog in terms of testing the sire. A dog's own score is only a guide to what he MAY DO. A progeny test tells one what a sire IS DOING. It is important, however, that X-rays are not preselected but that all dogs are sent in regardless of whether your vet advises that they look good or bad. If you submit a biased sample your dog may appear to look better than he is but he will breed like he really is not as he has been made to appear. Note that sire tables are a guide to hip production only and give no clues to other virtues/failings of the respective sires.

It is important when looking at sire tests to pay attention to numbers and give more credence to more reliable tests and less to those based on few progeny. Moreover other features must be considered which, of necessity, are not given in any report assessing only hip status. However the breed is in a very poor state as regards hips and this needs greater attention from breeders.

Sires close to publication (8 progeny scored) are Anchorfields Roisterer, Darnacan Abacus Royal*, Humberfield Justin Thyme, Mizzimoas Ambassador and Trevabyn Trebyn*. Submission of their progeny could lead to their inclusion in future reports. The submission of more Clumbers is imperative if the breed is to be improved in hip terms.

Ames.

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c M.B. Willis, 1993