



Te Rūnanga Matua, Take Kuri o Aotearoa



INTERPRETATION OF NZVA HIP DYSPLASIA SCHEME SCORING SYSTEM

The NZVA Hip Dysplasia scheme is based on the same scoring system used by the British and Australian Veterinary Associations. Each dog is scored on 9 separate criteria.

These are divided into 2 sections. The subtotal of section A and Section B - and the total of both sections are reported per hip and as a combined score. The higher the score, the poorer the hip conformation. There is no specific cut-off point at which a dog is considered to have hip dysplasia. Rather the score is a scale that is intended to allow breeders to rate an individual dog versus the average score of that breed, and against other potential breeding candidates.

Section A – joint laxity

The hip joint is a “ball and socket” joint which is primarily stabilized by the surrounding soft tissues. All hips have a small amount of “looseness” or laxity which allows the hip to articulate over a wide range of motion. However, in Hip Dysplasia there is excessive laxity during a puppy's growth phase which allows the hip to partly dislocate and then the ball wears against the edge of the socket. The three criteria deemed to be most indicative of **joint laxity** (Norberg angle, subluxation score and incongruity between the femoral head and cranial acetabular edge) are subtotaled out of a maximum of 36. This subtotal score indicates the severity of the joint incongruity and is a limited indication of subluxation. The remaining components of the overall total score are all measures of osteophyte development (osteoarthritis) which, whilst a positive indication of CHD status, are age dependent. The presence of joint laxity is known to be the primary determinant of the degree to which the hip joint will degenerate due to abnormal loading resulting in osteoarthritis.



The x-ray left shows how the subluxation score is determined on the hip on the left and how the Norberg Angle is determined on the hip joint pictured on the right. Subluxation score is a representation of the amount by which the socket rim overlaps the balls centre (shaded area on the x-ray). When the centre of the ball lies well within the confines of the socket the subluxation score is zero. As the centre of the ball rides further out from rim the SLS score increases to a maximum of 6. The Norberg angle is measured from the centre line of the hips to the cranial rim of the socket. An angle of 105 degrees or more is considered normal and has a score of 0, as the angle becomes smaller the score increases to a maximum of 6.

- The recommendation “Whilst the ideal score (subtotal) is 0, a 2 or less is acceptable”. This recommendation is based on the per hip score, so a **total of 4 or less is acceptable**.



Te Rūnanga Matua, Take Kuri o Aotearoa



Section B - arthritis

Consists of 6 further categories which all represent anatomical locations that can develop osteophytes.. Cartilage injury, the extent of which is the real determinant of the symptoms of arthritis, is not detectable on x-rays. Instead we look for the tell-tale signs of new bone development (osteophytes) which appear around the joint. Osteophytes are areas where new bone has developed in response to abnormal joint dynamics and degeneration of articular cartilage therefore they are positive indicators of **osteoarthritis**. Hip Dysplasia is defined as degeneration of the hip joint which is caused by abnormal development of the hip. Other causes of arthritis of the hip (old age, wear and tear, or trauma) are actually rare; therefore arthritis which develops in a dog by 1 year of age is positive evidence of dysplasia. On that basis the presence of **ANY** score in section B means the dog **has** Hip Dysplasia.

Some important points to note are;

- As the degree of new bone formation increases so does the score. Because arthritis worsens over time, the NZVA score increases over a dog's life.
- Because a dog can be scored as young as 12 months there is a risk that some dogs that truly have hip dysplasia will not yet have developed any osteophytes (false negatives).
- The positioning of the x-ray (hip extended radiographic view) actually places the hips in their position of least laxity which is favourable to the section A score. However this decreases the scheme's benefit by increasing false negatives.

What can be done to mitigate these effects?

1. Ideally dogs should be scored as old as possible prior to the information being required for breeding selections. i.e. if a sire is not intended to be bred until 2 years of age after it has proved itself in the show ring then it should not be scored at 12 months in preference to 20+ months.
2. If Hip Dysplasia is a particular problem within a breed or line of dogs and if a concerted effort is to be made to reduce its incidence then breeders should use the PennHIP method. This is a distraction radiographic technique which is available from veterinarians who have received training in the method. A fulcrum is placed between the legs with the dog on its back under anaesthesia. The legs are manipulated against the fulcrum and an x-ray is taken to show the maximal degree of laxity present. The heritability of the PennHIP method is higher (approximately twofold) in comparison to the NZVA method. Thus faster genetic gain can be made using selection based on the PennHIP method than with standard radiographic techniques. A list of PennHIP veterinarians in NZ is available on the website. www.nzva.org.nz