

CLINICAL GRADING SCALE FOR THORACOLUMBAR INTERVERTEBRAL DISC EXTRUSION			
GRADE	DESCRIPTION	APPROXIMATE CHANCE OF RECOVERY	
		Without surgery	With spinal surgery
1	Painful*, but able to walk normally or almost normally	80% <sup>2,3,8,9</sup>	80 to 95% <sup>1,6,11</sup>
2	Able to walk. The walk is wobbly and they may stagger rather like a drunken person. They might place their paws upside-down or cross their legs over.	80% <sup>2,3,8,9</sup>	95% <sup>1,4,5,6,10</sup>
3	Cannot walk unassisted. They <i>can</i> make some deliberate movements with their affected legs.	80% <sup>7</sup>	95% <sup>7</sup>
4	Cannot walk unassisted. Cannot make any deliberate movements with the affected legs	64% <sup>7,12</sup>	90% <sup>7</sup>
5	Cannot walk unassisted. Cannot make any deliberate movements with the affected legs <i>plus</i> No deep pain in toes of affected legs	10% <sup>7</sup>  Up to 17.5% of grade 5 dogs will go downhill during the first week due to PMM†	About 50-60% <sup>7</sup>  Up to 17.5% of grade 5 dogs will go downhill during the first week due to PMM†

Refs: 1) Aikawa et al 2012, 2) Davies & Sharp 1983, 3) Hayashi et al 2007, 4) Ingram et al 2013, 5) Jeong et al 2018, 6) Kazakos et al 2005, 7) Langerhuus & Miles 2017, 8) Levine et al 2007, 9) Mann et al 2007, 10) Nečas 1999, 11) Sukhiani et al 1996, 12) Sedlacek et al 2022, 13) Olby et al 2003, 14) Olby et al 2016

\*Dogs of all grades (1 to 5) tend to be painful to start with, especially around the affected area of their spine.

† PMM (progressive myelomalacia) is a painful and untreatable condition that causes progressive deterioration. It is seen in up to 17.5% of grade 5 dogs<sup>1,13,14</sup>.

## References

1. Aikawa, T., Fujita, H., Kanazono, S., Shibata, M., & Yoshigae, Y. (2012). Long-term neurologic outcome of hemilaminectomy and disk fenestration for treatment of dogs with thoracolumbar intervertebral disk herniation: 831 cases (2000–2007). *Journal of the American Veterinary Medical Association*, 241(12), 1617-1626. In 279 **grade 1-2** dogs, 96.8% had a good long term outcome, but there was a non-ambulatory period after surgery in many dogs, with only 86.7% dogs walking within 14 days, and 3% of “successful” cases not walking until 2 months post-op. There was a **95%** good outcome in 180 **grade 3** dogs. 81.9% of dogs walked within 2 wks. 2.3% of dogs took >61 days to walk again. Mean time to walking was 7.7 days (Aikawa et al 2012). Outcome was 98% successful in 161 **grade 4** dogs. Approx 70% walked within 14 days, and about 8% dogs took >61days to walk again. Mean time to walking was around 11 days. **52%** of 211 **grade 5** dogs recovered ambulation. 36% of successful cases could walk within 14 days. 26% walked within 15-30 days, 18% walked at between 31-60 days. 11% walked at between 2-6 months. 3% walked at between 6-12 months. The remaining few dogs were lost to follow-up.
2. Davies, J. V., & Sharp, N. J. H. (1983). A comparison of conservative treatment and fenestration for thoracolumbar intervertebral disc disease in the dog. *Journal of Small Animal Practice*, 24(12), 721-729. Out of 8 grade 1 dogs managed non-surgically, 100% recovered. Out of 38 grade 2 dogs managed non-surgically, 84% recovered. Out of 10 grade 3 dogs managed non-surgically, 100% recovered. Out of 6 grade 4 dogs managed non-surgically, 3 recovered (50%). Out of 14 grade 5 dogs managed non-surgically, 1 recovered (7%). Mean average recovery times were 3 weeks (grade 1 dogs), 6 weeks (grade 2 dogs), 9 weeks (grade 3 dogs), 12 weeks (grade 4 dogs) and 4 weeks (grade 5 dog). Signs of IVDD recurred at a later date in some cases, though the severity of recurrence is not stated. Rate of recurrence was 28% (grade 1 dogs), 27% (grade 2 dogs), 66% (grade 3 dogs), 33% (grade 4 dogs).
3. Hayashi, A. M., Matera, J. M., & de Campos Fonseca, A. C. B. (2007). Evaluation of electroacupuncture treatment for thoracolumbar intervertebral disk disease in dogs. *Journal of the American Veterinary Medical Association*, 231(6), 913-918. 16 out of 19 (84%) grade 3 and 4 dogs regained the ability to walk without surgery (Hayashi et al 2012). Out of 14 grade 5 dogs managed non-surgically, 4 regained the ability to walk. According to the authors, “most” dogs in this study were only assessed over a period of three weeks. Therefore it may be possible that recovery continued beyond this point in some “unsuccessful” dogs, and also that recurrence may have occurred in “successful” dogs. Some of the dogs in this study had received electroacupuncture.
4. Ingram, E. A., Kale, D. C., & Balfour, R. J. (2013). Hemilaminectomy for thoracolumbar Hansen Type I intervertebral disk disease in ambulatory dogs with or without neurologic deficits: 39 cases (2008–2010). *Veterinary Surgery*, 42(8), 924-931.
5. Jeong, I. S., Rahman, M. M., Kim, H., Lee, G. J., Seo, B. S., Choi, G. C., Kim S., & Kim, N. (2018). Prognostic value with intervertebral herniation disk disease in dogs. *Journal of Advanced Veterinary and Animal Research*, 5(2), 240-246.
6. Kazakos, G., Polizopoulou, Z. S., Patsikas, M. N., Tsimopoulos, G., Roubies, N., & Dessiris, A. (2005). Duration and severity of clinical signs as prognostic indicators in 30 dogs with thoracolumbar disk disease after surgical decompression. *Transboundary and Emerging Diseases*, 52(3), 147-152. 6/6 grade 3 dogs all did well after surgery. 8/11 (73%) grade 4 dogs had a “fair to good” outcome, ie. they could walk. Out of 8 grade 5 dogs, 4 regained the ability to walk after surgery (Kazakos et al 2005). Walking took 15 days -2 months.
7. Langerhuus, L., & Miles, J. (2017). Proportion recovery and times to ambulation for non-ambulatory dogs with thoracolumbar disc extrusions treated with hemilaminectomy or conservative treatment: A systematic review and meta-analysis of case-series studies. *The Veterinary Journal*, 220, 7-16.

8. Levine, J. M., Levine, G. J., Johnson, S. I., Kerwin, S. C., Hettlich, B. F., & Fosgate, G. T. (2007). Evaluation of the success of medical management for presumptive thoracolumbar intervertebral disk herniation in dogs. *Veterinary surgery*, 36(5), 482-491. A retrospective questionnaire-based study looking at non-surgical management. Out of 122 grade 1 dogs, 84 recovered (69%). Out of 63 grade 2 dogs, 35 recovered (56%). Out of 23 grade 3 dogs, 13 recovered (57%). Out of 12 grade 4 dogs, 6 recovered (50%). Out of 3 grade 5 dogs, none recovered.
9. Mann, F. A., Wagner-Mann, C. C., Dunphy, E. D., Ruben, D. S., Rochat, M. C., & Bartels, K. E. (2007). Recurrence rate of presumed thoracolumbar intervertebral disc disease in ambulatory dogs with spinal hyperpathia treated with anti-inflammatory drugs: 78 cases (1997–2000). *Journal of Veterinary Emergency and Critical Care*, 17(1), 53-60. . A retrospective questionnaire-based study looking at non-surgical management. Out of 77 grade 1-2 dogs treated non-surgically, 100% recovered, but around 50% then experienced a recurrence of clinical signs. Most but not all recurrences happened within the first year (median 9 months after first episode). Recurrence rate was significantly higher in dogs treated with corticosteroids than in dogs treated with NSAIDs.
10. Nečas, A. (1999). Clinical aspects of surgical treatment of thoracolumbar disc disease in dogs. A retrospective study of 300 cases. *Acta Veterinaria Brno*, 68(2), 121-130.
11. Sukhiani, H. R., Parent, J. M., Atilola, M. A., & Holmberg, D. L. (1996). Intervertebral disk disease in dogs with signs of back pain alone: 25 cases (1986-1993). *Journal of the American Veterinary Medical Association*, 209(7), 1275-1279
12. Sedlacek, J., Rychel, J., Giuffrida, M., & Wright, B. (2022). Nonsurgical Rehabilitation in Dachshunds With T3-L3 Myelopathy: Prognosis and Rates of Recurrence. *Frontiers in Veterinary Science*, 955. Sedlacek, J., Rychel, J., Giuffrida, M., & Wright, B. (2022). Nonsurgical Rehabilitation in Dachshunds With T3-L3 Myelopathy: Prognosis and Rates of Recurrence. *Frontiers in Veterinary Science*, 955. Retrospective study looking at 40 dachshunds (or dachshund crossbreeds) with presumed disc extrusion. All had non-surgical recovery including some rehabilitation. 27 of 27 grade 1-3 dogs recovered. 7/9 grade 4 dogs recovered. 0/4 grade 5 dogs recovered. BUT 6 of the dogs that entered the study with deep pain had previously been recorded as having no deep pain. Out of these dogs with questionable deep pain, 3/6 recovered.
13. Olby, N., Levine, J., Harris, T., Muñana, K., Skeen, T., & Sharp, N. (2003). Long-term functional outcome of dogs with severe injuries of the thoracolumbar spinal cord: 87 cases (1996–2001). *Journal of the American Veterinary Medical Association*, 222(6), 762-769. 64 of 70 dogs with intervertebral disk herniation underwent surgery; 9 (14%) were euthanized within 3 weeks after surgery (7 because of ascending myelomalacia), 37 (58%) regained DPP and the ability to walk, 7 (11%) regained the ability to walk without regaining DPP, and 11 (17%) remained paraplegic without DPP. Outcome was not associated with any of the factors evaluated, but speed of recovery of ambulation was significantly associated with body weight and age. 15 (41%) and 12 (32%) dogs that regained DPP had intermittent fecal and urinary incontinence, respectively.
14. Olby, N. J., Muguet-Chanoit, A. C., Lim, J. H., Davidian, M., Mariani, C. L., Freeman, A. C., ... & Longshore, R. (2016). A placebo-controlled, prospective, randomized clinical trial of polyethylene glycol and methylprednisolone sodium succinate in dogs with intervertebral disk herniation. *Journal of veterinary internal medicine*, 30(1), 206-214. A prospective clinical trial. 63 dogs with grade 5 thoracolumbar IVDD underwent spinal surgery within 24 hours of onset of clinical signs. 47.6% of these dogs regained the ability to walk by the end of the study at 12 weeks post-op. 17.5% of dogs developed progressive myelomalacia within the first week.