



Cervical Spine Mechanical Disorders: Diagnosis & Physical Therapy Management

Part I: Cervical Examination & Classification

Timothy W. Flynn PT, Ph.D., OCS, FAAOMPT

Note to Participants: There are interactive pop-up questions throughout this lecture. If you choose to pause the lecture and return at a later time, a natural break time would be after answering the interactive questions. (You are able to pause at any time and the presentation will "remember" where you were. It's just a more natural time to pause after the interactive questions.) For your convenience, this outline reflects where/when within the lecture the interactive questions occur.

This lecture has 108 slides and is 124 minutes in duration.

- I. Overview of cervical thoracic disorders
 - A. Scope of problem
 - 1. Costs and frequency in PT practice
 - B. Knowledge translation and clinical experience
 - 1. Relationships
 - 2. Change
- II. Evidence-based cervical exam
 - A. Red and yellow flags
 - 1. Psychosocial variables
 - B. Screening for fractures
 - 1. Canadian C-spine rules

Interactive Questions – slide 29 @ 47 minutes

- C. Neuromotor exam
 - 1. Reflex
 - 2. Motor
 - 3. Sensory
 - 4. Upper motor neuron signs

Interactive Questions – slide 51 @ 69 minutes

- D. Outcomes measuring and monitoring

Interactive Questions – slide 59 @ 80 minutes

- III. Classification of mechanical neck pain
 - A. Intervention skill set and categories
 - 1. Mobility
 - 2. Centralization
 - 3. Pain control
 - 4. Conditioning
 - 5. Reduce headache

Interactive Questions – slide 71 @ 91 minutes

Notes

-
- B. Application in practice
 - 1. Changing categories
 - 2. Expected outcomes

Interactive Questions – slide 99 @ 117 minutes

EDUCATA

Bibliography

1. Ariens GA, van Mechelen W, Bongers PM, Bouter LM, van der WG. Psychosocial risk factors for neck pain: a systematic review. *Am J Ind Med.* 2001;39(2):180-193.
2. George SZ, Fritz JM, Erhard RE. A comparison of fear-avoidance beliefs in patients with lumbar spine pain and cervical spine pain. *Spine.* 2001;26(19):2139-2145.
3. Johnston V, Jimmieson NL, Souvlis T, Jull G. Interaction of psychosocial risk factors explain increased neck problems among female office workers. *Pain.* 2007 Jun;129(3):311-20.
4. Choudhry NK, Fletcher RH, Soumerai SB. Systematic review: the relationship between clinical experience and quality of healthcare. *Ann Intern Med.* 2005;142:260-73.
5. Kendall et al. 1997.
6. Kendall NA, Linton SJ, Main CJ. Guide to assessing psychosocial yellow flags in acute low back pain: risk factors for long-term disability and work loss. Wellington, NZ: Accident Rehabilitation and Compensation Insurance Corporation of New Zealand and the National Health Committee; 2002.
7. Childs JD, Fritz JM, Piva SR, Erhard RE. Clinical decision making in the identification of patients likely to benefit from spinal manipulation: a traditional versus an evidence-based approach. *J Orthop Sports Phys Ther.* 2003 May;33(5):259-72.
8. Bot et al. 2005.
9. Linton SJ. A review of psychological risk factors in back and neck pain. *Spine.* 2000;25(9):1148-1156.
10. Nederhand MJ, Ijzerman MJ, Hermens HJ, Turk DC, Zilvold G. Predictive value of fear avoidance in developing chronic neck pain disability: consequences for clinical decision making. *Arch Phys Med Rehabil.* 2004;85(3):496-501.
11. Nederhand MJ, Hermens HJ, Ijzerman MJ, Groothuis KG, Turk DC. The effect of fear of movement on muscle activation in posttraumatic neck pain disability. *Clin J Pain.* 2006;22(6):519-525.
12. Gatchel et al. 1995.
13. Burton et al. 1995.
14. Lacroix et al. 1990.
15. Main et al. 1992.
16. Maruta et al. 1997.
17. Stiell IG, Wells GA, Vandemheen KL. The Canadian C-spine rule for radiography in alert and stable trauma patients. *JAMA.* 2001 Oct 17;286(15):1481-8.
18. Bandiera G, Stiell IG, Wells GA. The Canadian C-spine rule performs better than unstructured physician judgment. *Ann Emerg Med.* 2003 Sep;42(3):395-402.

-
19. Cleland JA, Childs JD, Fritz JM, Whitman JM. Interrater reliability of the history and physical examination in patients with mechanical neck pain. *Arch Phys Med Rehabil.* 2006;87(10):1388-1395.
 20. Haas M, Grouppe E, Panzer D, Partna L, Lumsden S, Aickin M. Efficacy of cervical endplay assessment as an indicator for spinal manipulation. *Spine.* 2003;28(11):1091-1096.
 21. Hermann KM, Reese CS. Relationships among selected measures of impairment, functional limitation, and disability in patients with cervical spine disorders. *Phys Ther.* 2001;81(3):903-914.
 22. Humphreys BK, Delahaye M, Peterson CK. An investigation into the validity of cervical spine motion palpation using subjects with congenital block vertebrae as a "gold standard." *BMC Musculoskelet Disord.* 2004 Jun 15;5:19.
 23. Kristjansson E. Reliability of ultrasonography for the cervical multifidus muscle in asymptomatic and symptomatic subjects. *Man Ther.* 2004;9(2):83-88.
 24. Norlander S, Nordgren B. Clinical symptoms related to musculoskeletal neck-shoulder pain and mobility in the cervicothoracic spine. *Scand J Rehabil Med.* 1998;30(4):243-251.
 25. Piva SR, Erhard RE, Childs JD, Browder DA. Intertester reliability of passive intervertebral and active movements of the cervical spine. *Man Ther.* 2006;11:321-330.
 26. Pool JJ, Hoving JL, de Vet HC, van Mameren H, Bouter LM. The interexaminer reproducibility of physical examination of the cervical spine. *J Manipulative Physiol Ther.* 2004;27(2):84-90.
 27. Rubinstein SM, Pool JJ, van Tulder MW, Riphagen II, de Vet HC. A systematic review of the diagnostic accuracy of provocative tests of the neck for diagnosing cervical radiculopathy. *Eur Spine J.* 2007 Mar;16(3):307-19.
 28. Seffinger MA, Najm WI, Mishra SI, et al. Reliability of spinal palpation for diagnosis of back and neck pain: a systematic review of the literature. *Spine.* 2004;29(19):E413-E425.
 29. Viikari-Juntura E, Takala E, Riihimaki H, Martikainen R, Jappinen P. Predictive validity of symptoms and signs in the neck and shoulders. *J Clin Epidemiol.* 2000;53(8):800-808.
 30. Wainner RS, Fritz JM, Irrgang JJ, Delitto A, Allison S, Boninger ML. Development of a clinical prediction rule for the diagnosis of carpal tunnel syndrome. *Arch Phys Med Rehabil.* 2005;86(4):609-618.
 31. Wainner RS, Fritz JM, Irrgang JJ, Boninger ML, Delitto A, Allison A. Reliability and diagnostic accuracy of the clinical examination and patient self-report measures for cervical radiculopathy. *Spine.* 2003;28(1):52-62.
 32. Zito G, Jull G, Story I. Clinical tests of musculoskeletal dysfunction in the diagnosis of cervicogenic headache. *Man Ther.* 2006;11(2):118-129.
 33. Sung RD, Wang JC. Correlation between a positive Hoffmann's reflex and cervical pathology in asymptomatic individuals. *Spine (Phila Pa 1976).* 2001 Jan 1;26(1):67-70.
 34. Vernon H, Mior S. The Neck Disability Index: a study of reliability and validity. *J Manipulative Physiol Ther.* 1991 Sep;14(7):409-15.

-
35. Cleland JA, Fritz JM, Whitman JM, Palmer JA. The reliability and construct validity of the Neck Disability Index and patient specific functional scale in patients with cervical radiculopathy. *Spine*. 2006;31(5):598-602.
 36. Stratford et al. *Phys Canada*. 1999.
 37. Childs JD, Piva SR. Psychometric properties of the functional rating index in patients with low back pain. *Eur Spine J*. 2005;14:1008-12.
 38. Childs JD, Piva SR, Fritz JM. Responsiveness of the numeric pain rating scale in patients with low back pain. *Man Ther*. 2005;10(3):207-18.
 39. Shah RV, Everett CR, McKenzie-Brown AM, Sehgal N. Discography as a diagnostic test for spinal pain: a systematic review. *Spine (Phila Pa 1976)*. 2005 Jun 1;30(11):1331-4.
 40. Jaeschke R, Singer J, Guyatt GH. Measurement of health status. Ascertaining the minimal clinically important difference. *Control Clin Trials*. 1989 Dec;10(4):407-15.
 41. Hill et al. 2004.
 42. Hoving et al. 2004.
 43. Lee. 2007.
 44. Rose. 1989.
 45. Childs JD, Fritz JM, Piva SR, Whitman JM. Proposal of a classification system for patients with neck pain. *J Orthop Sports Phys Ther*. 2004 Nov;34(11):686-96; discussion 697-700.
 46. Fritz JM, Brennan GP. Preliminary examination of a proposed treatment-based classification system for patients receiving physical therapy interventions for neck pain. *Phys Ther*. 2007 May; 87(5):513-24.
 47. Wang WT, Olson SL, Campbell AH, Hanten WP, Gleeson PB. Effectiveness of physical therapy for patients with neck pain: an individualized approach using a clinical decision-making algorithm. *Am J Phys Med Rehabil*. 2003 Mar;82(3):203-18; quiz 219-21.