

care facilities to close them down. Current provision of pain care services often seems based more on incomes than on outcomes.

## Summary

Chronic nonmalignant pain is less a symptom of a disease than a disease in itself. Accordingly, successful treatments rely less on identifying underlying pathology than on treating neural causes of pain amplification, psychologic causes of disability, and the sequelae of deconditioning and psychiatric illness. The outcome, when such treatment is provided, is remarkably favorable.

## References

- [1] Wiesel SW, Tsourmas N, Feffer HL, et al. A study of computer assisted tomography. 1. The incidence of positive CT scans in an asymptomatic group of patients. *Spine* 1984;9(6): 549-55.
- [2] Boden SD, Davis DO, Dina TS, et al. Abnormal magnetic resonance scans of the lumbar spine in asymptomatic subjects. *J Bone Joint Surg Am* 1990;72(3):403-8.
- [3] Jensen M, Brant-Zawadzki M, Obuchowski N, et al. MRI of lumbar spine in people without back pain. *N Engl J Med* 1994;331:69-73.
- [4] Fields HL, Heinricher MM. Anatomy and physiology of a nociceptive modulatory system. *Philos Trans R Soc Lond B Biol Sci* 1985;308:361-74.
- [5] Arvidsson J, Ygge J, Grant G. Cell loss in lumbar dorsal root ganglia and transganglionic degeneration after sciatic nerve resection in the rat. *Brain Res* 1986;373:15-21.
- [6] Sugimoto T, Bennett GJ, Kajander KC. Transsynaptic degeneration in the superficial dorsal horn after sciatic nerve injury: effects of a chronic constriction injury, transection, and strychnine. *Pain* 1990;42:205-13.
- [7] Watkins LR, Maier SF. Beyond neurons: evidence that immune and glial cells contribute to pathological pain states. *Physiol Rev* 2002;82:981-1011.
- [8] Woolf CJ. Central mechanisms of acute pain. In: Bond MR, Charlton JE, Woolf CJ, editors. *Pain research and clinical management*, vol. 4, Proc Vth World Congress on pain. Amsterdam: Elsevier; 1991. p. 25-34.
- [9] Torebjörk HE, Lundberg L, LaMotte R. Neural mechanisms for capsaicin-induced hyperalgesia (abstract). *Pain* 1990;41(Supplement 1):S114.
- [10] Coderre TJ, Katz J, Vaccarino AL, et al. Contribution of central neuroplasticity to pathological pain: review of clinical and experimental evidence. *Pain* 1993;52:259-85.
- [11] Duncan GH, Bushnell MC, Bates R, et al. Task-related responses of monkey medullary dorsal horn neurons. *J Neurophysiol* 1987;57(1):289-310.
- [12] Zubieta JK, Heitzeg MM, Smith YR, et al. COMT val 158 met genotype affects  $\mu$ -opioid neurotransmitter responses to a pain stressor. *Science* 2003;299(5610):1240-3.
- [13] Uhl GR, Sora I, Wang Z. The  $\mu$  opiate receptor as a candidate gene for pain: polymorphisms, variations in expression, nociception, and opiate responses. *Proc Natl Acad Sci U S A* 1999;96(14):7752-5.
- [14] Devor M, Raber P. Heritability of symptoms in an experimental model of neuropathic pain. *Pain* 1990;49:51-67.
- [15] Coghill RC, McHaffie JG, Yen YF. Neural correlates of interindividual differences in the subjective experience of pain. *Proc Natl Acad Sci U S A* 2003;100(14):8538-42.
- [16] Giesecke T, Gracely RH, Grant MAB, et al. Evidence of augmented central pain processing in idiopathic chronic low back pain. *Arthritis Rheum* 2004;50(2):613-23.

- [17] Curatolo M, Arendt-Nielsen L, Petersen-Felix S. Evidence, mechanisms, and clinical implications of central hypersensitivity in chronic pain after whiplash injury. *Clin J Pain* 2004; 20(6):469–76.
- [18] Bigos SJ, Battie MC, Spengler DM, et al. A prospective study of work perceptions and psychosocial factors affecting the report of back injury. *Spine* 1991;16(1):1–6.
- [19] Papageorgiou AC, Macfarlane GJ, Thomas E, et al. Psychosocial factors in the workplace—do they predict new episodes of low back pain? Evidence from the South Manchester Back Pain Study. *Spine* 1997;22(10):1137–42.
- [20] Valat JP, Goupille P, Vedere V. Low back pain: risk factors for chronicity. *Rev Rhum Engl Ed* 1997;64(3):189–94.
- [21] Dionne CE, Koepsell TD, Von Korff M, et al. Predicting long-term functional limitations among back pain patients in primary care settings. *J Clin Epidemiol* 1997;50(1):31–43.
- [22] Hasenbring M, Marienfeld G, Kuhlendahl D, et al. Risk factors of chronicity in lumbar disc patients. A prospective investigation of biologic, psychological, and social predictors of therapy outcome. *Spine* 1994;19(24):2759–65.
- [23] Long DM. Effectiveness of therapies currently employed for persistent low back and leg pain. *PRN Forum* 1995;4(2):122–5.
- [24] Greenough CG, Fraser RD. The effects of compensation on recovery from low-back injury. *Spine* 1989;14(9):947–55.
- [25] Greenough CG, Taylor LJ, Fraser RD. Anterior lumbar fusion. A comparison of noncompensation patients with compensation patients. *Clin Orthop* 1994;300:30–7.
- [26] Penta M, Fraser RD. Anterior lumbar interbody fusion. A minimum 10-year follow-up. *Spine* 1997;22(20):2429–34.
- [27] Rainville J, Sobel JB, Hartigan C, et al. The effect of compensation involvement on the reporting of pain and disability by patients referred for rehabilitation of chronic low back pain. *Spine* 1997;22(17):2016–24.
- [28] Schrader H, Obelieniene D, Bovim G, et al. Natural evolution of late whiplash syndrome outside the medicolegal context. *Lancet* 1996;347:1207–11.
- [29] Spitzer WO, Skovron ML, Salmi LR, et al. Scientific monograph of the Quebec Task Force on Whiplash-Associated Disorders: redefining “Whiplash” and its management. *Spine* 1995;20(85):3S–73S.
- [30] Blake C, Garrett M. Impact of litigation on quality of life outcomes in patients with chronic low back pain. *Ir J Med Sci* 1997;166(3):124–6.
- [31] Carragee EJ, Alamin TF, Miller JL, et al. Discographic, MRI and psychosocial determinants of low back pain disability and remission: a prospective study in subjects with benign persistent back pain. *The Spine Journal* 2005;5:24–35.
- [32] Buckelew SP, Huyser B, Hewett JE, et al. Self-efficacy predicting outcome among fibromyalgia subjects. *Arthritis Care Res* 1996;9(2):97–104.
- [33] Rejeski WJ, Craven T, Ettinger WH Jr, et al. Self-efficacy and pain in disability with osteoarthritis of the knee. *J Gerontol B Psychol Sci Soc Sci* 1996;51(1):24–9.
- [34] Turner JA, Holtzman S, Mancl L. Mediators, moderators, and predictors of therapeutic change in cognitive-behavioral therapy for chronic pain. *Pain* 2007;127(3):276–86. Epub 2006 Oct 27.
- [35] Crisson JE, Keefe FJ. The relationship of locus of control to pain coping strategies and psychological distress in chronic pain patients. *Pain* 1988;35:147–54.
- [36] Aldrich S, Eccleston C, Crombez G. Worry about chronic pain: vigilance to threat and misdirected problem solving. *Behav Res Ther* 2000;38:457–70.
- [37] McCracken LM, Eccleston C. Coping or acceptance: what to do about chronic pain? *Pain* 2003;105:197–204.
- [38] Fordyce WE. Behavioral methods for chronic pain and illness. St. Louis (MO): CV Mosby Co; 1976.
- [39] Flor H, Lutzenberger W, Knost B, et al. Spouse presence alters brain response to pain. Orlando (FL): Society for Neuroscience; 2002.

- [40] Hölzl R, Kleinböhl D, Huse E. Implicit operant learning of pain sensitization. *Pain* 2005; 115(1-2):12-20.
- [41] Kori SH, Miller RP, Todd DD. Kinesophobia: a new view of chronic pain behavior. *Pain Management* 1990;3(1):35-43.
- [42] Polatin PB, Kinney RK, Gatchel RJ, et al. Psychiatric illness and chronic low-back pain. The mind and the spine—which goes first? *Spine* 1993;18(1):66-71.
- [43] Currie SR, Wang JL. Chronic back pain and major depression in the general Canadian population. *Pain* 2004;107(1-2):54-60.
- [44] Gureje O, Simon GE, Von Korff M. A cross-national study of the course of persistent pain in primary care. *Pain* 2001;92:195-200.
- [45] Von Korff M, Crane P, Lane M, et al. Chronic spinal pain and physical-mental comorbidity in the United States: results from the national comorbidity survey replication. *Pain* 2005; 113:331-9.
- [46] Rudy TE, Kerns RD, Turk DC. Chronic pain and depression: toward a cognitive-behavioral mediation model. *Pain* 1988;35(2):129-40.
- [47] DeGood DE, Kiernan B. Perception of fault in patients with chronic pain. *Pain* 1996;64(1): 153-9.
- [48] Savage SR. Preface: pain medicine and addiction medicine—controversies and collaboration. *J Pain Symptom Manag* 1993;8:254-6.
- [49] Adams LL, Gatchel RJ, Robinson RC, et al. Development of a self-report screening instrument for assessing potential opioid medication misuse in chronic pain patients. *J Pain Symptom Manag* 2004;27:440-59.
- [50] Covington EC, Kotz MK. Psychological approaches to the treatment of pain in addiction. In: Graham AW, Schultz TK, Mayo-Smith M, Ries RK, editors. *Principles of Addiction Medicine*. 3rd Edition. Washington, DC: American Society of Addiction Medicine; 2003. p. 1421-37.
- [51] Kaila-Kangas L, Leino-Arjas P, Riihimaki H, et al. Smoking and overweight as predictors of hospitalization for back disorders. *Spine* 2003;28:1860-8.
- [52] Kouyanou K, Pither CE, Wessely S. Medication misuse, abuse and dependence in chronic pain patients. *J Psychosom Res* 1997;43:497-504.
- [53] Hoffmann NG, Olofsson O, Salen B, et al. Prevalence of abuse and dependency in chronic pain patients. *Int J Addict* 1995;30:919-27.
- [54] American Psychiatric Association. *DSM-IV. Diagnostic and statistical manual of mental disorders*. 4th edition. Washington, DC: American Psychiatric Association; 1994.
- [55] van der Kolk BA, Pelcovitz D, Roth S, et al. Dissociation, somatization, and affect dysregulation: the complexity of adaptation to trauma. *Am J Psychiatry* 1996;153(7 Suppl): 83-93.
- [56] Rome HP, Rome JD. Limbically augmented pain syndrome (laps): kindling, corticolimbic sensitization, and the convergence of affective and sensory symptoms in chronic pain disorders. *Pain Med* 2000;1(1):7-23.
- [57] Daniell HW, Lentz R, Mazer NA. Open-label pilot study of testosterone patch therapy in men with opioid-induced androgen deficiency. *J Pain* 2006;7(3):200-10.
- [58] Jamison R, Schein J, Vallow S, et al. Neuropsychological effects of long-term opioid use in chronic pain patients. *J Pain* 2003;4(2 Suppl):1-104 [abstract 604].
- [59] Tassain V, Attal N, Fletcher D, et al. Long term effects of oral sustained release morphine on neuropsychological performance in patients with chronic non-cancer pain. *Pain* 2003; 104(1-2):389-400.
- [60] Porter J, Jick H. Addiction rare in patients treated with narcotics. *N Engl J Med* 1980;302: 123.
- [61] Perry S, Heidrich G. Management of pain during debridement: a survey of US burn units. *Pain* 1982;13:267-80.
- [62] Potter JS, Hennessy G, Borrow JA, et al. Substance use histories in patients seeking treatment for controlled-release oxycodone dependence. *Drug Alcohol Depend* 2004;76:213-5.

- [63] Brown RL, Fleming MF, Patterson JJ. Chronic opioid analgesic therapy for chronic low back pain. *J Am Board Fam Pract* 1996;9(3):191-204.
- [64] Ballantyne JC, Mao J. Medical progress: opioid therapy for chronic pain. *N Engl J Med* 2003;349:1943-53.
- [65] Roth SH, Fleischmann RM, Burch FX, et al. Around-the-clock, controlled-release oxycodone therapy for osteoarthritis-related pain: placebo-controlled trial and long-term evaluation. *Arch Intern Med* 2000;160:853-60.
- [66] Robbins L. Long-acting opioids for severe chronic daily headache. *Headache Q* 1999;10:135-9.
- [67] Saper JR, Lake AE 3rd, Hamel RL, et al. Daily scheduled opioids for intractable head pain: long-term observations of a treatment program. *Neurology* 2004;62:1687-94.
- [68] Kalso E, Edwards JE, Moore RA, et al. Opioids in chronic non-cancer pain: systematic review of efficacy and safety. *Pain* 2004;112:372-80.
- [69] Brown J, Klapow J, Doleys D, et al. Disease-specific and generic health outcomes: a model for the evaluation of long-term intrathecal opioid therapy in noncancer low back pain patients. *Clin J Pain* 1999;15:122-31.
- [70] Covington EC. Pain and addictive disorder: Challenge and opportunity. In: Benzon HT, Rathmell J, Wu C, Turk DC, Argoff CE, editors. *Raj's Practical Management of Pain*, 4th Edition. New York: Elsevier-Mosby.
- [71] Kennedy JA, Crowley TJ. Chronic pain and substance abuse: a pilot study of opioid maintenance. *J Subst Abuse Treat* 1990;7:233-8.
- [72] Dunbar SA, Katz NP. Chronic opioid therapy for nonmalignant pain in patients with a history of substance abuse: report of 20 cases. *J Pain Symptom Manage* 1996;11(3):163-71.
- [73] Schofferman J. Long-term use of opioid analgesics for the treatment of chronic pain of nonmalignant origin. *J Pain Symptom Manage* 1993;8(5):279-88.
- [74] Rome JD, Townsend CO, Bruce BK, et al. Chronic noncancer pain rehabilitation with opioid withdrawal: comparison of treatment outcomes based on opioid use status at admission. *Mayo Clin Proc* 2004;79(6):759-68.
- [75] Moulin DE, Iezzi A, Amireh R, et al. Randomised trial of oral morphine for chronic non-cancer pain. *Lancet* 1996;347:143-7.
- [76] Harden RN, Bruehl S, Siegler J, et al. Pain, psychological status, and functional recovery in chronic pain patients on daily opioids: a case comparison. *J Back Musculoskeletal Rehab* 1997;9:101-8.
- [77] Eriksen J, Sjøgren P, Bruera E, et al. Critical issues on opioids in chronic non-cancer pain: an epidemiological study. *Pain* 2006;125(1-2):172-9.
- [78] Airaksinen O, Brox JI, Cedraschi C, et al. Chapter 4: European guidelines for the management of chronic nonspecific low back pain. *Eur Spine J* 2006;15(Suppl 2):S192-300.
- [79] Franson RC, Saal JS, Saal JA. Human disc phospholipase A2 is inflammatory. *Spine* 1992;(6 Suppl):S129-32.
- [80] Genevay S, Gabay C. Is disk-related sciatica a TNF $\alpha$ -dependent inflammatory disease? *Joint Bone Spine* 2005;72(1):4-6.
- [81] Malmberg AB, Yaksh TL. Hyperalgesia mediated by spinal glutamate or substance P receptor blocked by spinal cyclooxygenase inhibition. *Science* 1992;257:1276-8.
- [82] Coderre TJ, Gonzales R, Goldyne ME, et al. Noxious stimulus-induced increase in spinal prostaglandin E2 is noradrenergic terminal-dependent. *Neurosci Lett* 1990;115:253-8.
- [83] Singh G, Triadafilopoulos G. Epidemiology of NSAID induced gastrointestinal complications. *J Rheumatol Suppl*. 1999;56:18-24.
- [84] Wolfe MM, Lichtenstein DR, Singh G. Gastrointestinal toxicity of nonsteroidal antiinflammatory drugs. *N Engl J Med* 1999;340(24):1888-99.
- [85] Dubois RW, Melmed GY, Henning JM, et al. Risk of upper gastrointestinal injury and events in patients treated with cyclooxygenase (COX)-1/COX-2 nonsteroidal antiinflammatory drugs (NSAIDs), COX-2 selective NSAIDs, and gastroprotective cotherapy: an appraisal of the literature. *J Clin Rheumatol* 2004;10(4):178-89.

- [86] McQuay H, Carroll D, Jadad AR, et al. Anticonvulsant drugs for management of pain: a systematic review. *BMJ* 1995;311:1047–52.
- [87] Gilron I, Watson CP, Cahill CM, et al. Neuropathic pain: a practical guide for the clinician. *CMAJ* 2006;175(3):265–75.
- [88] Colombo B, Annovazzi PO, Comi G. Medications for neuropathic pain: current trends. *Neurol Sci* 2006;27(Suppl 2):S183–9.
- [89] McCleane GJ. Does gabapentin have an analgesic effect on background, movement and referred pain? A randomized, double-blind, placebo controlled study. *The Pain Clinic* 2001; 13:103–7.
- [90] Remmers AE, Sharma U, LaMoreaux L, et al. Pregabalin treatment of patients with chronic low back pain [American Pain Society 2000 Poster 660]. Available at: [http://ampainsoc.org/db2/abstract/view?poster\\_id=730#660](http://ampainsoc.org/db2/abstract/view?poster_id=730#660). Accessed March 12, 2007.
- [91] Muehlbacher M, Nickel MK, Kettler C, et al. Topiramate in treatment of patients with chronic low back pain: a randomized, double-blind, placebo-controlled study. *Clin J Pain* 2006;22(6):526–31.
- [92] Khoromi S, Patsalides A, Parada S, et al. Topiramate in chronic lumbar radicular pain. *J Pain* 2005;6(12):829–36.
- [93] Eisenberg E, Damunni G, Hoffer E, et al. Lamotrigine for intractable sciatica: correlation between dose, plasma concentration and analgesia. *Eur J Pain* 2003;7(6):485–91.
- [94] Sindrup SH, Otto M, Finnerup NB, et al. Antidepressants in the treatment of neuropathic pain. *Basic Clin Pharmacol Toxicol* 2005;96:399–409.
- [95] Cayley WE Jr. Antidepressants for the treatment of neuropathic pain. *Am Fam Physician* 2006;73(11):1933–4.
- [96] Lynch ME. Antidepressants as analgesics: a review of randomized controlled trials. *J Psychiatry Neurosci* 2001;26(1):30–6.
- [97] Perrot S, Maheu E, Javier RM, et al. Guidelines for the use of antidepressants in painful rheumatic conditions. *Eur J Pain* 2006;10:185–92.
- [98] Rowbotham MC, Goli V, Kunz NR, et al. Venlafaxine extended release in the treatment of painful diabetic neuropathy: a double-blind, placebo-controlled study. *Pain* 2004;110(3): 697–706.
- [99] Goldstein DJ, Lu Y, Detke MJ, et al. Duloxetine vs. placebo in patients with painful diabetic neuropathy. *Pain* 2005;116(1–2):109–18.
- [100] Sullivan MD, Robinson JP. Antidepressant and anticonvulsant medication for chronic pain. *Phys Med Rehabil Clin N Am* 2006;17(2):381–400.
- [101] Fishbain D. Evidence-based data on pain relief with antidepressants. *Ann Med* 2000;32(5): 305–16.
- [102] Salerno SM, Browning R, Jackson JL. The effect of antidepressant treatment on chronic back pain: a meta-analysis. *Arch Intern Med* 2002;162(1):19–24.
- [103] Staiger TO, Gaster B, Sullivan MD, et al. Systematic review of antidepressants in the treatment of chronic low back pain. *Spine* 2003;28(22):2540–5.
- [104] Atkinson JH, Slater MA, Wahlgren DR, et al. Effects of noradrenergic and serotonergic antidepressants on chronic low back pain intensity. *Pain* 1999;83(2):137–45.
- [105] Gimbel J, Linn R, Hale M, et al. Lidocaine patch treatment in patients with low back pain: results of an open-label, nonrandomized pilot study. *Am J Ther* 2005;12(4):311–9.
- [106] Frerick H, Keitel W, Kuhn U, et al. Topical treatment of chronic low back pain with a capicum plaster. *Pain* 2003;106(1–2):59–64.
- [107] Van Tulder MW, Koes BW, Bouter LM. Conservative treatment of acute and chronic non-specific low back pain. A systematic review of randomized controlled trials of the most common interventions. *Spine* 1997;22(18):2128–56.
- [108] Aley KO, Kulkarni SK. Baclofen analgesia in mice: a GABA-B mediated response. *Methods Find Exp Clin Pharmacol* 1991;13(10):681–6.
- [109] Terrence CF, Fromm GH, Tenicela R. Baclofen as an analgesic in chronic peripheral nerve disease. *Eur Neurol* 1985;24(6):380–5.

- [110] Loubser PG, Akman NM. Effects of intrathecal baclofen on chronic spinal cord injury pain. *J Pain Symptom Manage* 1996;12:241-7.
- [111] Herman RM, D'Luzansky SC, Ippolito R. Intrathecal baclofen suppresses central pain in patients with spinal lesions. A pilot study. *Clin J Pain* 1992;8(4):338-45.
- [112] Taira T, Kawamura H, Tanikawa T, et al. A new approach to control central deafferentation pain: spinal intrathecal baclofen. *Stereotact Funct Neurosurg* 1995;65(1-4):101-5.
- [113] Berry H, Hutchinson DR. Tizanidine and ibuprofen in acute low-back pain: results of a double-blind multicenter study in general practice. *J Int Med Res* 1988;16(2):83-91.
- [114] Fryda-Kaurimsky Z, Muller-Fassbender H. Tizanidine (DS 103-282) in the treatment of acute paravertebral muscle spasm: a controlled trial comparing tizanidine and diazepam. *J Int Med Res* 1981;9(6):501-5.
- [115] Samanta A, Samanta J. Is epidural injection of steroids effective for low back pain? *BMJ* 2004;328:1509-10.
- [116] Koes BW, Scholten RJ, Mens JM, et al. Efficacy of epidural steroid injections for low back pain and sciatica: a systematic review of randomized clinical trials. *Pain* 1995;63:279-88.
- [117] Brox JI, Reikeras O, Nygaard O, et al. Lumbar instrumented fusion compared with cognitive intervention and exercises in patients with chronic back pain after previous surgery for disc herniation: a prospective randomized controlled study. *Pain* 2006;122(1-2):145-55. Epub 2006 Mar 20.
- [118] Liddle SD, Baxter GD, Gracey JH. Exercise and chronic low back pain: what works? *Pain* 2004;107:176-90.
- [119] Trivedi MH, Greer TL, Grannemann BD, et al. Exercise as an augmentation strategy for treatment of major depression. *J Psychiatr Pract* 2006;12(4):205-13.
- [120] Dunn AL, Trivedi MH, Kampert JB, et al. Exercise treatment for depression: efficacy and dose response. *Am J Prev Med* 2005;28(1):1-8.
- [121] Ströhle A, Feller C, Onken M, et al. The acute antipanic activity of aerobic exercise. *Am J Psychiatry* 2005;162:2376-8.
- [122] Salmon P. Effects of physical exercise on anxiety, depression, and sensitivity to stress: a unifying theory. *Clin Psychol Rev* 2001;21(1):33-61.
- [123] De Jong JR, Vlaeyen JWS, Onghena P, et al. Fear of movement/(re)injury in chronic low back pain education or exposure in vivo as mediator to fear reduction? *Clin J Pain* 2005;21:9-17.
- [124] Lacroix JM, Powell J, Lloyd GJ, et al. Low-back pain. Factors of value in predicting outcome. *Spine* 1990;15(6):495-9.
- [125] Waddell G, Newton M, Henderson I, et al. A fear-avoidance beliefs questionnaire (FABQ) and the role of fear-avoidance beliefs in chronic low back pain and disability. *Pain* 1993;52:157-68.
- [126] Klenerman L, Slade PD, Stanley IM, et al. The prediction of chronicity in patients with an acute attack of low back pain in a general practice setting. *Spine* 1995;20(4):478-84.
- [127] Turner JA, Clancy S. Comparison of operant behavioral and cognitive-behavioral group treatment for chronic low back pain. *J Consult Clin Psychol* 1988;56(2):261-6.
- [128] Compas BE, Haaga DA, Keefe FJ, et al. Sampling of empirically supported psychological treatments from health psychology: smoking, chronic pain, cancer, and bulimia nervosa. *J Consult Clin Psychol* 1998;66(1):89-112.
- [129] Morley S, Eccleston C, Williams A. Systematic review and meta-analysis of randomized controlled trials of cognitive behavior therapy and behavior therapy for chronic pain in adults, excluding headache. *Pain* 1999;80:1-13.
- [130] McQuay HJ, Moore RA, Eccleston C, et al. Systematic review of outpatient services for chronic pain control. *Health Technol Assess* 1997;1(6):i-iv,1-135.
- [131] Thieme K, Flor H, Turk DC. Psychological pain treatment in fibromyalgia syndrome: efficacy of operant behavioural and cognitive behavioural treatments. *Arthritis Research &*

- Therapy 2006, 8:R121. Available at: <http://arthritis-research.com/content/8/4/R121>. Accessed March 12, 2007.
- [132] Turner JA, Mancl L, Aaron LA. Short- and long-term efficacy of brief cognitive-behavioral therapy for patients with chronic temporomandibular disorder pain: a randomized, controlled trial. *Pain* 2006;121(3):181-94.
- [133] NIH Technology Assessment Panel on integration of behavioral and relaxation approaches into the treatment of chronic pain and insomnia: integration of behavioral and relaxation approaches into the treatment of chronic pain and insomnia. *JAMA* 1996;276(4):313-8.
- [134] Flor H, Birbaumer N. Comparison of the efficacy of electromyographic biofeedback, cognitive-behavioral therapy, and conservative medical interventions in the treatment of chronic musculoskeletal pain. *J Consult Clin Psychol* 1993;61(4):653-8.
- [135] Turk DC. Efficacy of multidisciplinary pain centers in the treatment of chronic pain. In: Cohen MJM, Campbell JM, editors. *Pain treatment centers at a crossroads: a practical and conceptual reappraisal*. Progress in pain research and management, vol. 7. Seattle (WA): IASP Press; 1996. p. 257-73.
- [136] Dearnorff WW, Rubin HS, Scott DW. Comprehensive multidisciplinary treatment of chronic pain: a follow-up study of treated and non-treated groups. *Pain* 1991;45(1):35-43.
- [137] Flor H, Fydrich T, Turk DC. Efficacy of multidisciplinary pain treatment centers: a meta-analytic review. *Pain* 1992;49:221-30.
- [138] Turk DC. Clinical effectiveness and cost-effectiveness of treatments for patients with chronic pain. *Clin J Pain* 2002;18(6):355-65.
- [139] Guzmán J, Esmail R, Karjalainen K, et al. Multidisciplinary rehabilitation for chronic low back pain: systematic review. *Br Med J* 2001;322(7301):1511-6.