



Exercise: Chronic low back pain

Intervention

Exercise therapy has been reported as an effective intervention for the management of chronic low back pain (LBP). It can be provided as a supervised program in healthcare settings, group sessions, or as unsupervised home exercise regimens. While there is an enormous variety of exercise programs available, the current evidence suggests that there is no 'ideal' exercise intervention. The many different forms of exercise have shown similar benefits for chronic LBP. Therefore, exercise programs are probably best chosen according to issues such as patient and clinician preferences, accessibility and costs.

Exercise interventions reported in the literature generally include one or more of the following elements:

- Core or trunk strengthening
- Flexibility and stretching
- Aerobic exercises and functional restoration activities
- Education and incorporation of psychological principles (eg pacing or goal setting)

Indication

Non-specific LBP is a major health problem worldwide and is estimated to affect up to 70% of adults.

Episodes of non-specific LBP that have persisted beyond 12 weeks.

Most (approximately 90%) LBP is non-specific: the diagnosis of non-specific LBP implies exclusion of patho-anatomical causes.

Pain relief and improved function are the main benefits from exercise reported in patients with chronic LBP. Improvements associated with exercise therapy were reported for short (up to 6 weeks), intermediate (up to 12 months), and long term follow ups (>12 months).

Contraindications

Exercise is contraindicated for patients with any serious medical condition as the cause of the LBP (ie cancer, fracture, infection, cauda equina syndrome).

The usual precautions and contraindications for exercise also need to be considered (eg falls, injury).

Adverse Effects

Exercise is considered a safe intervention. However, a minority of people can report mild adverse reactions to exercise (eg increased low back soreness, stiff and sore limb muscles). This is often a natural reaction to starting an exercise program for the first time or after a prolonged period of inactivity even in people without LBP.

Availability

All patients need some level of oversight when performing an exercise regimen with which they have no prior experience.

The decision to refer a patient to a physiotherapist, exercise physiologist or other rehabilitation specialist depends upon the presentation of the individual patient (and the capacity to supervise exercise in general practice).

Costs vary significantly depending on the type of exercise. In some cases, health insurance may cover some costs.



Description

The following examples of exercise programs have been shown to be effective for chronic low back pain:

Motor control exercise (or stabilisation exercises)

Motor control exercise aims to retrain the control and coordination of the muscles that support the spine (ie deep abdominal muscles, deep spinal muscles, pelvic floor muscles). It was developed based on the rationale that patients with chronic LBP have altered ability to control the deep trunk muscles (ie lack of strength, timing or coordination leading to pain and loss of function).

The intervention initially involves learning how to activate these deep trunk muscles, then progresses to more functional and complex tasks involving the activation of the deep and superficial muscles. It usually requires one-on-one treatment from a physiotherapist and regular monitoring to check you have the right technique.

Motor control exercise has been shown to be effective for reducing pain and function in patients with LBP, but does not provide any additional benefit when compared to other exercises.

Yoga

Yoga is an ancient mind-body exercise. Its philosophies, principles and practices were derived from the Vedic tradition of India and the Himalayas. The exercise combines postures and movements, breathing techniques, relaxation and concentration, and meditation (awareness of thoughts). There is a wide-range of styles and schools of yoga; however there is no clear difference in effectiveness amongst them. Patients should choose a class that suits their fitness level and preferences. Yoga is suitable for anyone, regardless of age or fitness level. It is usually performed in group sessions under the supervision of a qualified instructor.

Yoga has been reported to be effective for reducing pain and back-specific disability in patients with LBP. It is unknown whether it is more or less effective than other types of exercise and medicines.

Pilates

Pilates is a type of exercise that is similar to other core strengthening programs. It was originally developed to allow injured dancers and athletes to return to exercise, but nowadays it has been adapted as a type of exercise and treatment for conditions such as back pain.

Pilates concentrates on stabilising the core muscles prior to challenging movements, but also on combining breathing and movements, and essentially involves isometric contractions. It mainly focuses on the contraction of the deep muscles of the back and abdominals.

Pilates has been reported to be more effective than minimal intervention (no treatment or advice) for pain and disability outcomes, and for improvement in function and global impression of recovery. Pilates does not seem to be more effective than other types of exercises.



Description

Graded activity exercise

Graded activity exercises were developed based on the rationale that cognitive-behavioral factors play an important role in patients with LBP. The exercise program aims to reduce pain and disability by addressing physical (eg muscle strength, balance) and psychological (eg fear and avoidance, kinesiophobia) components. Other psychological principles can also be used, such as pacing and goal setting. It is usually performed in supervised face-to-face individual sessions with a physiotherapist.

Graded activity exercise can improve pain and disability in patients with chronic LBP.

Tai Chi

Tai Chi is a Chinese mind-body exercise therapy. It is a low-impact activity that involves slow movements, breathing exercises, and meditation. Anyone, regardless of age or fitness level, can practise this activity. Classes are performed by a Tai Chi instructor usually in group sessions, but can be performed individually.

A Tai Chi program has been shown to be safe and effective for treating LBP, with improvements in pain intensity and disability level.

Alexander Technique

The Alexander Technique involves individualised instructions aiming to improve posture, balance, coordination, and to recognise harmful habits to avoid painful movements (ie being aware of muscle overuse when standing, walking and sitting). The Alexander Technique is primarily an educational approach to manage posture and movement, and may improve self-management of back pain. The Alexander Technique requires lessons with a qualified teacher.

There is just one major study that tested the Alexander Technique for LBP. It reported significant improvements for people who received exercise and lessons in the Alexander Technique. However, more studies are needed to understand better the benefits of this type of treatment.

Home-based programs

Home-based exercise programs usually consist of simple strengthening and stretching exercises including walking programs. They have been shown to be effective for reducing pain and disability. However, adherence can be a barrier for the effectiveness of these programs. Home-based programs should be attractive for the patients and supported by health professionals to help facilitate adherence.

Tips and Challenges

There is no specific exercise program that can be recommended over another. Patient preferences and response to exercise should be used to determine the type of exercise selected. This also improves patient adherence.

There is no specific dosage of exercise recommended; however, 20 hours of individually supervised sessions over 8 to 12 weeks accompanied by a home program is usually recommended.



References

- Chou R. Low back pain (chronic). Systematic review 1116. BMJ Clinical Evidence. <http://clinicalevidence.bmj.com/x/systematic-review/1116/overview.html> October 2010. Accessed 10 September 2015.
- Crow EM, Jeannot E, Trehwela A. Effectiveness of Iyengar yoga in treating spinal (back and neck) pain: A systematic review. *Int J Yoga*. 2015;8(1):3-14.
- Hall AM, Maher CG, Lam P, Ferreira M, Latimer J. Tai chi exercise for treatment of pain and disability in people with persistent low back pain: a randomized controlled trial. *Arthritis Care Res (Hoboken)*. 2011;63(11):1576-83.
- Hoffmann TC, Glasziou PP, Briffa T, Bennell K, Alison J, Maher CG, Singh MF, Sherrington C. Prescribing exercise interventions for patients with chronic conditions. 2016;188(7):510-518.
- Javadian Y, Akbari M, Talebi G, Taghipour-Darzi M, Janmohammadi N. Influence of core stability exercise on lumbar vertebral instability in patients presented with chronic low back pain: A randomized clinical trial. *Caspian journal of internal medicine*. 2015;6(2):98-102.
- Lawford BJ, Walters J, Ferrar K. Does walking improve disability status, function, or quality of life in adults with chronic low back pain? A systematic review. *Clinical rehabilitation*. 2015.
- Macedo LG, Latimer J, Maher CG, Hodges PW, McAuley JH, Nicholas MK, Tonkin L, Stanton CJ, Stanton TR, Stafford R. Effect of motor control exercises versus graded activity in patients with chronic nonspecific low back pain: a randomized controlled trial. *Phys Ther*. 2012;92:363-377.
- Maher CG, Underwood M, Buchbinder R. Non-specific low back pain. *Lancet*. 2016;[Epub ahead of print]:PMID: 27745712
- McClean S, Brilleman S, Wye L. What is the perceived impact of Alexander technique lessons on health status, costs and pain management in the real life setting of an English hospital? The results of a mixed methods evaluation of an Alexander technique service for those with chronic back pain. *BMC Health Serv Res*. 2015;15:293.
- Meng XG, Yue SW. Efficacy of aerobic exercise for treatment of chronic low back pain: a meta-analysis. *Am J Phys Med Rehabil*. 2015;94(5):358-65.
- Patti A, Bianco A, Paoli A, Messina G, Montalto MA, Bellafiore M, et al. Effects of Pilates exercise programs in people with chronic low back pain: a systematic review. *Medicine*. 2015;94(4):e383.
- Saragiotto BT, Maher CG, Yamato TP, Costa LOP, Menezes Costa LC, Ostelo RWJG, Macedo LG. Motor control exercise for chronic non-specific low-back pain. *Cochrane Database of Systematic Reviews* 2016;1:CD012004.
- Searle A, Spink M, Ho A, Chuter V. Exercise interventions for the treatment of chronic low back pain: A systematic review and meta-analysis of randomised controlled trials. *Clinical rehabilitation*. 2015.
- van der Giessen RN, Speksnijder CM, Helders PJ. The effectiveness of graded activity in patients with non-specific low-back pain: a systematic review. *Disabil Rehabil*. 2012;34:1070-1076.



References

van Middelkoop M, Rubinstein SM, Verhagen AP, Ostelo RW, Koes BW, van Tulder MW. [Exercise therapy for chronic nonspecific low-back pain](#). Best Pract Res Clin Rheumatol. 2010;24(2):193-204.

Yamato TP, Maher CG, Saragiotto BT, Hancock MJ, Ostelo RW, Cabral CM, et al. [Pilates for low back pain](#). The Cochrane database of systematic reviews. 2015;7:Cd010265

You YL, Su TK, Liaw LJ, Wu WL, Chu IH, Guo LY. [The effect of six weeks of sling exercise training on trunk muscular strength and endurance for clients with low back pain](#). J Phys Ther Sci. 2015;27(8):2591-6.

Consumer Resources

Find a physiotherapist through the Australian Physiotherapy Association <https://www.physiotherapy.asn.au/APAWCM/Controls/FindAPhysio.aspx>

Find an exercise physiologist through Exercise and Sports Science Australia <https://www.essa.org.au>

NHS choices: Lower back pain exercises <http://www.nhs.uk/Livewell/Backpain/Pages/low-back-pain-exercises.aspx>

Yoga Australia <<link to

<https://www.yogaaustralia.org.au/search-registered-teachers>

Pilates Alliance Australasia <http://www.pilates.org.au>

Tai Chi Australia <http://www.taichiaustralia.com.au>

Australian Society of Teachers of the Alexander Technique <<www.austat.org.au

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