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**Core balance vs. strengthening in individuals with chronic low back pain**

Posted on **21 August, 2011** by **Joe Brence**

Chronic low back pain (CLBP) is one of the most prevalent and disabling conditions that we see as physiotherapists. In many countries, it is a leading cause for absenteeism from work and is one of the leading causes for long-term disability. Despite the prevalence of this disorder there is conflicting evidence in the best approach to its treatment.

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An article published in this month's edition of the Journal of Orthopaedic and Sports Physical Therapy (JOSPT) examined the utilization of trunk balance exercises in the treatment of CLBP.<sup>1</sup> The investigators of this randomized, clinical trial allocated seventy-nine participants into either an experimental group, which performed trunk balance and flexibility exercises, or a control group, which performed trunk strengthening and flexibility exercises. The participants of each group performed their assigned exercises twice a week for five weeks and several outcomes were measured including pain (on a visual analogue scale), disability (on a Roland and Morris Questionnaire) and quality of life (measured with the 12-Item Short-Form Health Survey).

**The outcomes:** the trunk balance group had statistically significant improvements in disability and quality of life. There was no significant difference in pain between the two groups.

In my interpretation of this study, I believe a couple of things can be speculated:

First, I believe the balance group did significantly better than the control because the experimenters accounted for visual feedback of the participants. The examiners had the balance group perform activities with their eyes closed which added an increase challenge to each task (this was done once the participants could perform the activities with their eyes open). Balance of the human body is related to a complex interaction of visual, vestibular and somatosensory input and coordinated motor outputs. When there is a lack of visual input, there is an associated impairment of proprioception when performing postural tasks. It has been demonstrated that this may occur due to a delay in trunk response to a sudden force.<sup>2</sup> I suspect that by performing the activities with their eyes closed, the individual's trunk musculature could be challenged in a different contextual environment which likely correlated better into function as compared to the group simply performing trunk stability activities.

Second, due to a delayed activation of trunk musculature in individuals with a history of low back pain, the longer performance times in the balance group (30 seconds to one minute) likely allowed a better recruitment of trunk stabilizing musculature. By putting the individuals in an unstable situation for a prolonged amount of time, the participants had more time for recruitment of trunk and spine muscles, which likely corresponds further into maintaining trunk control in a normal, dynamic environment.

Thirdly, there was a postintervention change in the VAS, but it was not statistically significant when comparing the two groups. I believe this is due to a decreased perception of threat to involved tissues once they are activated in a controlled manner. Despite the decrease in both groups, there was still some residual pain which corresponds to the notion that individuals with chronic low back pain probably do not have simply a bio-anatomical issue but instead a multidimensional disorder consisting of a combination of physical, behavioral, neurophysiological, cognitive and social factors. This combination may promote a continued output of pain in absence of tissue damage due to shear neuro-complexity.

Overall, this study indicates that perception of disability and quality of life can improve in individuals with chronic low back pain with the performance of balance activities. I believe that pain could further be controlled by taking into account all of the variables which are causing the continued output.

**Extra:** Try a couple of these balance activities which were used by the authors of this study (the exercises were unnamed, but I have named them for purpose of remembrance). Once easily performed, add a further challenge by closing your eyes!!! To learn more of these activities, read this article in this month's edition of JOSPT.

1. **Bird dog Holds:** While in a quadruped position, extend opposite upper and lower limbs and hold each position for 1 minute.



2. **Bridge with leg lifts:** From a hook-lying position, assume and hold a bridged position with one lower limb raised with an extended knee. Maintain this position for 30 seconds.



Bridge with Leg Lift

3. **Kneeling overhead toss:** Kneel with both knees on a pillow and grasp both of your hands together. With your elbows extended, move your upper limbs into flexion and extension with simultaneous head movements in the same direction. Each position is held for up to three minutes.

1. Gatti R, Faccendini S, Tettamanti A, Barbero M, Balestri A, Calori G. Efficacy of Trunk Balance Exercises for Individuals with Chronic Low Back Pain: A Randomized Clinical Trial. *J Orthop Sports Phys Ther* 2011; 41(8): 542-552.
2. Radebold A, Cholewicki J, Polzhofer GK, Greene HS. Impaired Postural Control of the Lumbar Spine Is Associated With Delayed Muscle Response Times in Patients With Chronic Idiopathic Low Back Pain. *Spine* 2001; 26(7): 724-730.

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**CoachHannah** 19 hours ago   
 Here is a version of it. If you type "overhead medicine ball toss" into youtube there are a ton of them.  
<http://www.youtube.com/watch?v=MB3Qc-Sg2eY>

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**Tor** 19 hours ago   
 Hi Hannah – yes that's what I'd initially thought but it doesn't seem to correlate with the description: "3. Kneeling overhead toss: Kneel with both knees on a pillow and grasp both of your hands together. With your elbows extended, move your upper limbs into flexion and extension with simultaneous head movements in the same direction. Each position is held for up to three minutes." I don't get the head movements bit?

**Core Balance vs. Core Strengthening for treatment of LBP » Physiotherapy Info** 11 hours ago

[...] Read my monthly blog post @ SportEX discussing my review of an article published discussing core balance vs. core strengthening for the treatment of LBP [...]

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**Joseph Brence** 23 hours ago   
 To clarify this further, the activity is more of an endurance/balance activity for the trunk musculature and the simultaneous head and arm movements are to challenge the proprioceptive systems/center of balance. Try performing this exercise with your eyes closed. By removing the visual system and displacing your center of gravity with arm/head movements, your trunk musculature must kick-in to prevent loss of balance. It is not the same activity as demonstrated in that video and do not let the "name" of the exercise confuse you.

1. Kneel with both knees on a pillow.
2. Grasp your hands together with arms straight out in front of you with elbows extended.
3. Close your eyes (they can be open but his will challenge you further as stated in the article)
4. Move your arms overhead (keeping the hands together and elbows extended) while moving your head simultaneously into extension. Make them move together.
5. Once your arms are overhead and head is "looking up", hold the position for up to three minutes.
6. Relax
7. Repeat, but the next time move the arms down while simultaneously looking down.

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**Dave Germeyer** 19 hours ago   
 Thank you Joe. I will definately add these holding positions to my chronic LBP tool box, and nice disection of the article. Too many of us read something and fail to look at the source or how the study was performed.

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**katebaggio** 5 hours ago   
 Thank you for this, have been teaching these exercises in my Pilates classes for the past 3 years!

[reply](#)

**Annette ashy** 12 hours ago   
 thankyou for these balance exercises, i will add them to my tool box  
 I have always advised my clients to add some form of balance work, basic, and this has 99% of the time work for them. must always give 6 weeks min to feel the real benefit.annette

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