



Enhancing Low-back Health through Stabilization Exercise

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Background Perspective

Appropriate exercise design for the low back cannot be achieved with pamphlets showing suggested exercises. Some people with a history of back troubles desire pain relief and spine stability (a health objective) while others may seek a performance objective (which may be counterproductive to optimal back health). Some people need more stability while others may need more mobility. Some exercises will exacerbate the back troubles of some people but may help others. Because each individual has different needs, various assessment approaches should be utilized to aid in subsequent decisions for exercise design. Further, proficient exercise professionals will need an understanding of the issues, and of the myths and realities pertaining to each issue, to form a foundation for the decision process. The focus here is to briefly introduce a few selected issues, followed by an example of a quantified and evidence-based exercise program.

Rather than provide thin background material that will not be robust enough to assist the exercise design process (the book is necessary to serve that purpose), I have decided to offer some initial food for thought. There is no shortage of manuals and books

offering wisdom on the topic of low-back health written by authors with a wide spectrum of backgrounds, ranging from formal medical or rehabilitation training to lay people who found an approach to alleviate their own back troubles and have become self-proclaimed prophets "believing" that others will benefit. Their intentions are honorable, but their advice is rarely based on a sound scientific foundation. In my opinion, too many of these books offer inappropriate recommendations or even harmful suggestions. Years ago, as I began to develop scientific investigations into various aspects of understanding low-back problems, I would ask my graduate students to find the scientific foundation for many of the "common sense" recommendations I was hearing both in the clinic and in industrial settings. To my surprise, they would report that the literature yielded no, or very thin, evidence.

Examples of such "common sense" recommendations include the following:

- Bend your knees when performing sit-ups.
- When performing a lift, bend your knees and keep your back straight.
- Reducing the load throughout the workday will reduce the risk of back troubles.

In fact, the benefit of each of these has been shown to be highly questionable.

DR. STUART MCGILL is a professor at the University of Waterloo and a world-renowned lecturer and expert in spine function and injury prevention and rehabilitation. He is the author of more than 200 scientific publications that address the issues of lumbar function, low-back injury mechanisms, investigation of tissue loading during rehabilitation programs, and the formulation of work-related injury avoidance strategies. His work has received several awards including the Volvo Bioengineering Award for Low Back Pain Research from Sweden. He has been an invited lecturer at many universities, and delivered more than 150 invited addresses to various societies around the world. As a consultant to industry, he has provided expertise on assessment and reduction of the risk of low-back injury to various government agencies, several corporations, professional athletes and teams, and many legal firms.



It is widely believed that stretching the back and increasing the range of motion is beneficial and reduces back problems—however, the scientific evidence shows that, on average, those who have more range of motion in their backs have a greater risk of future troubles. Clearly there is a tradeoff between mobility and stability; the optimal balance is a very personal and individual variable. Indeed, the "stability/mobility balance" may shift during a progressive exercise program as symptoms resolve, with advancing age, or as rehab/training objectives change. Another generally perceived goal of training the back is to increase strength. Strength has little association with low-back health. In fact, many people hurt their backs in an attempt to increase strength. It could be argued that this is an artifact, in that some exercise programs intended to enhance strength contained poorly chosen exercises such as sit-ups. Performing sit-ups both replicates a potent injury mechanism (specifically posterior disc herniation) and results in high loads on the spine. On the other hand, muscle endurance, as opposed to strength, has been shown to be protective against future back troubles. Further, for many people, it is better to train for stability rather than stretching to increase range of motion.

Recent investigations into injury mechanisms have revealed that many back-training practices actually replicate the loads and motions that cause parts of the low back to become injured. For example, disc herniations need not have excessive loading on the back to occur; rather, repeated forward flexion motion of the spine is a more potent mechanism. Thus, if full flexion or deviation is avoided in the spine, the risk of herniation is remote. But for most fitness professionals the link between injury and exercise needs to be better developed.

Injury is caused by damage to supporting

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**Thirumalaisamy P.
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