Straube S, Harden M, and Schroeder H, and et al. Back schools for the treatment of chronic low back pain: possibility of benefit but no convincing evidence after 47 years of research—systematic review and meta-analysis. *PAIN* 2016; 157: 2160–2172.

Reviewer: Linda Metzger 10-27-16
Design: Systematic review and meta-analysis
Objective: To systematically review the randomized controlled trial evidence on the effectiveness and safety of back schools for the treatment of chronic low back pain.

Summary of Results:

- Back school programs of different duration and content were included as long as they were educational and included training programs with lessons given to patients by a therapist with the aim of treating low back pain. Any intervention, including no intervention, could be used as a control group.
- The authors attempted to update the most recent Cochrane review on this topic by Heymans in 2004. The new search included 19 newer trials through October 2015 completed since the Heyman review.
- Thirty-one studies were included using various control groups: 11 studies used usual care control groups, 9 studies used an active control other than back schools for comparison, 7 studies compared back schools with multimodal treatments, and 4 studies compared different types of back schools with one another.
- The active treatments in the 9 trials comparing back school vs other active treatments were so heterogeneous that a meta-analysis could not be performed for these studies. Only 11 studies comparing back schools vs usual care were considered for meta-analyses, and of these, only 5 trials were included in the various meta-analyses.
- For the comparison of back schools with usual care or waitlist (3 studies), no clinically significant differences were found for mean change in pain (VAS) (MD -1.08, 95% CI -1.73 to -0.43), and function on the 24 point RMDQ (MD -1.63, 95% CI -2.73 to -0.52) 1 to 2 months after baseline. Follow-up results at 4 to 6 months after baseline were statistically and clinically insignificant.
- The authors concluded that no firm conclusions can be reached. The small number of studies and the methodological and statistical heterogeneity observed in some of the meta-analyses significantly limit the conclusions that can be drawn. These findings must be interpreted with caution.

Reasons not to cite as evidence:

- Many of the RCTs in this review were conducted in different countries. Different intervention characteristics of back schools used in different countries leads to a very subjective term for back schools that describes an ambiguous, non-definable intervention. There is really no distinct back school intervention. The definition of back schools is very elusive. Differences in intervention characteristics produced such high heterogeneity between studies that dependable synthesis of the data could not be conducted.

- Unfortunately, 8 of the 9 trials comparing back school vs other active treatments were the newer studies that were not included in the Heyman review. These trials comprised almost half of the newer, more recent trials and were excluded from the meta-analyses (due to high heterogeneity), and thus were more importantly excluded from the synthesis of all the current information on this topic, especially versus active controls. This highest quality, newer evidence available is still flawed by considerable between-study heterogeneity.
- Of the 31 included studies, only 4 trials were included in the various meta-analyses comparing back schools vs usual care. Only these few trials reported outcomes in a way amenable to meta-analysis. Only 3 trials each (4 total) were included in the meta-analyses for pain and function outcomes. These 4 trials are a paltry representation of all the literature on back schools and chronic low back pain.
- No qualitative analysis of the other 27 articles included in the review, but not in the meta-analysis, was conducted.
- Two of the 3 studies included in the meta-analyses for mean VAS pain scores appeared to have an overall low risk of bias (Andrade 2008 and Ribeiro 2008), but further investigation revealed that the Andrade article was published in Portuguese. It could not be further evaluated for risk of bias. The third trial, Morone 2011, appeared to have a high risk of bias due to unclear randomization and allocation concealment. So the results of the pooled data on the outcome of pain are not derived from high quality studies and must be interpreted with caution. These results are uninformative for our purposes.
- All 3 studies included in the meta-analyses for function appeared at first to have an overall low risk of bias (Vollenbroeck-Hutten 2001, Andrade 2008 and Ribeiro 2008). Further investigation into the Vollenbroeck-Hutten article revealed that the back school intervention used was based on a Dutch student's dissertation combining characteristics of the Swedish and Canadian back school programs. Details of the intervention were not well described and omitting this information is a major error that fails the test of evidence. Two of the 3 RCTs used in the pooled data on the outcome of pain are not high quality studies and these results must also be interpreted with caution. These results are uninformative for our purposes.
- Adverse event reporting was very poor, so that reliable conclusions regarding the safety of back schools cannot be drawn.
- The authors concluded that no firm conclusions can be reached. There is insufficient high quality evidence to determine the effects of back schools on pain and function. No evidence of clinically important benefits was found.
- If in the 47 years since 1969, no evidence of a clear benefit of back schools could be obtained, this might mean that there is none and that any apparent efficacy is the result of biases at work in a situation when trials were largely small and not double blind. Doing the same thing over and over again and expecting different results is sometimes called "insane".

Assessment:

- This adequate systematic review shows there is an absence of evidence for the effectiveness of back schools for treating chronic low back pain.

References:

- Heymans MW, van Tulder MW, Esmail R, Bombardier C, Koes BW. Back schools for non-specific low-back pain. Cochrane Database Syst Rev 2004.
- Andrade SC, Arau´ jo AG, Vilar MJ. Escola de coluna para pacientes com lombalgia croˆ nica inespec´ıfica: benef´ıcios da associac¸ a˜ o de exerc´ıcios e educac¸ a˜ o ao paciente [in Portuguese]. Acta Reumatol Port 2008; 33: 443–50.
- Ribeiro LH, Jennings F, Jones A, Furtado R, Natour J. Effectiveness of a back school program in low back pain. Clin Exp Rheumatol 2008; 26:81–8.
- Morone G, Paolucci T, Alcuri MR, Vulpiani MC, Matano A, Bureca I, Paolucci S, Saraceni VM. Quality of life improved by multidisciplinary back school program in patıents with chronic non-specific low back pain: a single blind randomized controlled trial. Eur J Phys Rehabil Med 2011; 47:533–41.
- Vollenbroek-Hutten MMR, Hermens HJ, Wever D, Gorter M, Rinket J, Ijzerman MJ. Differences in outcome of a multidisciplinary treatment between subgroups of chronic low back pain patients defined using two multiaxial assessment instruments: the multidimensional pain inventory and lumbar dynamometry. Clin Rehabil 2004; 18:566–79.