

# Practice Improvement Record Example

## Knowledge Translation | Academic Research

### 1. What Self-Selected Activity did you do and why?

In your response include at a minimum: (a) name of activity, (b) description of activity, (c) date(s) of activity, (d) reason for choosing the activity (e) how the activity fits with your practice (current or future). Mandatory

*Research – conducting a systematic review during this past Fall to Spring – academic year*

*My primary role is a researcher and I am responsible for supervising and supporting students to meet their MscPT, MSc or PhD Rehab Med requirements. The goal was to conduct a systematic review of the evidence on paraspinal muscle impairments in patients with idiopathic scoliosis as part of a MSc PT thesis project for one of the students and coach him to present his results during his thesis defence. Documenting muscle impairments will later serve to guide the planning of novel interventions.*

### 2. What did you learn and how did you grow professionally?

In your response include, at a minimum, specific examples of: (a) what you learned, (b) how your personal competence improved, (c) how what you learned benefited patients or the physiotherapy/health care system, (d) include resources to show current information was used to improve your practice (name, source, topic). In drafting your response, consider the **guiding questions**.

*While I was familiar with the epidemiology and general signs and symptoms of scoliosis as well as the main therapy guidelines, I was not fully cognizant of the state of the evidence on impairments that could be targeted by physical therapy.*

*As part of our review, we realized that this is an understudied area in research on scoliosis. Mostly possibly because the main treatments for scoliosis are bracing and surgery which do not take into account muscle functions as playing much of a role for scoliosis. We had made the hypothesis that lack of endurance in paraspinal muscles would play a role in the ability of the patients to hold the straight spinal alignment throughout daily activities and we found a lack of research in this area or poor-quality research. Our hypothesis may be good but this justifies our planning to investigate it ourselves since the data is not available. Still we found that patients with scoliosis exhibit lack of strength and imbalanced EMG patterns that may be linked to risk of progression and that may be treatable by exercises. Interestingly past electrical stimulation therapies offered stimulation at the apex on the convex side. This is an area that is hyper active in scoliosis and not necessarily related to progression. We need to investigate imbalances at the end vertebra levels as possibly more relevant to progression.*

*This literature search showed there are deficits that can be treatable by exercises. We have highlighted gaps in research on paraspinal impairments. We need to demonstrate if impairments are linked to risk of progression by measuring how impairments measured at baseline correlate with progression in the long term. There are very few studies on this topic. Most studies are cross sectional and simply highlight that muscle imbalances may be a cause or a reaction to the curvatures. There is an opportunity for future research in this area.*

*We need to demonstrate which muscle weaknesses are linked to risk of progression and whether treating the impairments reduces the risk of progression. This review therefore provided avenues for future investigations that will be very relevant for physical therapists who want to justify their involvement with*

*scoliosis care.*

The review included over 30 articles here are a few citations that we reviewed

Negrini S, Donzelli S, Aulisa A et al. 2016 SOSORT guidelines: Orthopaedic and rehabilitation treatment of idiopathic scoliosis during growth. *Scoliosis and Spinal Disorders*. 2018;13(3). doi.org/10.1186/s13013-017-0145-8

Romano M, Minozzi S, Bettany-Saltikov J, et al. Exercises for adolescent idiopathic scoliosis. *Cochrane Database Syst Rev*. 2012;8:CD007837. doi:10.1002/14651858.CD007837.pub2.

Mokkink LB, Terwee CB, Knol DL, et al. The COSMIN checklist for evaluating the methodological quality of studies on measurement properties: A clarification of its content. *BMC Medical Research Methodology*. 2010;10(1):22. doi:10.1186/1471-2288-10-22.

Dejanovic A, Cambridge E. Isometric torso muscle endurance profiles in adolescents aged 15-18: normative values for age and gender differences. *Annals of human ...*. 2013;41(2):153–158. doi:10.3109/03014460.2013.837508.

de Oliveira ASA, Gianini PESP, Camarini PMFP, Bevilaqua-Grossi DD. Electromyographic analysis of paravertebral muscles in patients with idiopathic scoliosis. *Spine*. 2011;36(5):E334–E339. doi:10.1097/BRS.0b013e3181f516cd.

Tsai Y-T, Leong C-P, Huang Y-C, et al. The electromyographic responses of paraspinal muscles during isokinetic exercise in adolescents with idiopathic scoliosis with a Cobb's angle less than fifty degrees. *Chang Gung Med J*. 2010;33(5):540–550.

### **3. Looking back, which Standard of Practice or Ethical Conduct Responsibility was addressed by participating in this activity.**

Evidence informed practice  
Quality Improvement

### **4. Your evidence of participation.**

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