


Force-Sensing Table Technology: A system for training complex manual therapy procedures.

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Abstract

Topic: Methodology

Background/Rationale:

Most medical health care professions have shifted towards simulation for teaching and learning of complex motor skills such as those used by surgical, nursing, or emergency care professionals. However, there is little evidence of simulation being used to train manual therapy complex motor skills such as those used by physiotherapists, chiropractors, and massage therapists to name a few. Until now, all manual therapy professionals have been trained using observational tutoring methods alone and were void of any objective feedback on the dose of the treatment procedures. This has led to wide variability in performance of procedures and a system severely limited of methods for quality/safety control. Without a system to quantify the dose of the manual therapy treatments it has been difficult to standardize procedures for quality assurance, or study dose response relationships for safety and efficacy.

Objectives:

Our Innovation, creates a system for quality/safety control for the performance of complex manual therapy treatment procedures. It helps optimize curriculum design for the teaching and learning of complex manual therapy procedures with innovative simulation technology. It also provides a system to explore dose-response relationships of manual therapy procedures for different patient populations and conditions.

Description:

The technology is centered around treatment tables with force sensors built into them to measure transmitted loads applied through our patients. This technology allows us to examine what forces amplitudes are being applied to our patients, what direction of forces are being applied to our patients, as well as the load rates (speed of procedure). It can be used on real patients during actual treatments or manikins for training purposes providing infinite practice opportunities.

Impact:

Since 2009, we have published several papers in peer reviewed journals demonstrating its impact on both students and field practitioners. Within brief two hour educational

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Abstract

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interventions improvements in force modulation, force accuracy, and speed development have been observed short term and retained at long term follow up (5-7 months later). Not only is this an educational system but it also provides a method to assess for quality assurance, or to examine safe/effective doses of manual therapies for different populations/conditions which was never possible before.

This innovation has broad implications for several different regulated health care professionals that use manual therapy including but not limited to physiotherapists, chiropractors, massage therapists, osteopaths, naturopaths, and athletic therapists.