

# The evolution of teaching chiropractic skills: part 1 – a narrative review of lessons learned during the 120 collective years of four tutors in the technique trenches at the Canadian Memorial Chiropractic College

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*“The only constant is change” – Heraclitus, Greek Philosopher*

*The objective of this article, Part 1 of a two part series, is to provide a narrative review of the evolution of teaching chiropractic manual skills by four tutors who taught in the technique trenches at the Canadian Memorial Chiropractic College collectively for 120 years. Based on their collective memories, this narrative review describes the evolution of: central demonstrations; inconsistency between tutors with respect to demonstrating and grading chiropractic manual skills; determining course content; policy on students providing high velocity, low amplitude thrusts on each other during class time and testing; quantitative versus qualitative grading; remediation; acknowledgment of risk and; changes to technique class due to Covid. The results of a unique survey evaluating students’ perception of these changes is presented. The intent of this article is for faculty at other accredited educational programs to learn from our experiences and*

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*L’évolution de l’enseignement des compétences en chiropratique: la première partie - un examen narratif des leçons apprises au cours des 120 années collectives de quatre tuteurs dans les tranchées techniques au Canadian Memorial Chiropractic College*

*La seule constante est le changement » - Héraclite, philosophe grec*

*L’objectif de cet article, la première partie d’une série en deux parties, est de fournir une revue narrative de l’évolution de l’enseignement des compétences manuelles en chiropratique par quatre tuteurs qui ont enseigné dans les tranchées techniques au Canadian Memorial Chiropractic College, pendant 120 ans. En se fondant sur leurs souvenirs collectifs, cet examen narratif décrit l’évolution : des démonstrations centrales; de l’incohérence entre les tuteurs en ce qui concerne la démonstration et la notation des compétences manuelles chiropratiques; de la détermination du contenu du cours; de la politique sur les étudiants qui se poussent les uns les autres avec une grande vitesse et une faible amplitude pendant le temps de la classe et des tests; de la notation quantitative par rapport à la notation qualitative; de la remédiation;*

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The authors have no disclaimers, competing interests, or sources of support or funding to report in the preparation of this manuscript.

*potentially strengthen their pedagogical approach to teaching chiropractic manual skills.*

(JCCA. 2024;68(2):149-159)

KEY WORDS: chiropractic manual skills, teaching, technique, evaluation

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## Introduction

Although they began teaching during either the 1970s (Szaraz), 1980s (Kinsinger, Ross) or 1990s (Gleberzon) all four authors taught together at CMCC starting in 2004. Over the decades three of them (Szaraz, Ross, Gleberzon) were the chair of the technique department, and all four were course coordinators and taught in the technique trenches for over 25 years.

## Methods

A narrative review of the challenges encountered and solutions implemented is chronicled by four technique instructors (tutors) during their time in the ‘technique trenches’ at the Canadian Memorial Chiropractic College (CMCC). This review is principally based on their recollections of events throughout the collective 120 years they were on faculty, using a qualitative research methodology. Since no human subjects were involved in this review, ethics approval was not required.

## Results

### *Initial organization of technique classes*

Prior to 1999, technique classes were held on the main floor of the campus on 1900 Bayview Ave in Toronto, Ontario, Canada. The larger of two rooms housed seven of the 12 tutors and a separate room across the hall housed the other five. When the library was moved across the street into a separate building, technique classes were

*de la reconnaissance du risque et; des changements apportés à la classe technique en raison de la COVID. Les résultats d’un sondage unique évaluant la perception des élèves à l’égard de ces changements sont présentés dans cet article. L’objectif de cet article est de permettre aux professeurs d’autres programmes d’enseignement accrédités d’apprendre de nos expériences et de renforcer leur approche pédagogique de l’enseignement des compétences manuelles en chiropratique.*

(JCCA. 2024; 68(2) : 149-159)

MOTS CLÉS : compétences manuelles en chiropratique, enseignement, technique, évaluation

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relocated to one large and two smaller rooms on the third floor overlooking the adjacent cemetery and accessible only by a single staircase (not counting the fire escape that led to the parking lot).

Although it was necessary in both cases to have smaller rooms due to the large student population, the students and tutors in the smaller rooms were isolated from the main room. Despite the fact that the course coordinator described the tasks of the day to all the tutors, the separation resulted in two versions of the same daily lesson. Once the technique lab was relocated this was solved by having the demonstration in the main room sent to the smaller rooms by short circuit television

At the beginning of the academic year technique tutors were given attendance binders containing the names of the 16 students in their group, a course outline with lesson plans for each day (developed by the course coordinator) and shown the designated area in one of the technique rooms to which they were assigned. (Authors’ note: All technique tutors at CMCC were licensed chiropractors. Other chiropractic educational programs may refer to them as technique instructors. There were no student technique instructors).

On the first day of class the course coordinator would take center stage and welcome the class to the technique lab. Technique tutors were introduced, and a brief overview of the course was given. Students were asked to find their tutor and attendance was taken. In what would

years later be called an ‘icebreaker’, students were asked to introduce themselves and to share with the group the name of the university they attended and their area of study. Students were asked if they had ever been to a chiropractor before enrolling at the college (at that time all of them had) and what made them decide to apply to the program.

The next class the course coordinator would again take center stage and proceed to provide a central demo of the lesson plan for that day. All 160 students in the same academic year attended technique class at the same time. When the college relocated in 2004 to a larger, modern facility at 6100 Leslie Street (also in Toronto) this format continued, the only difference being there were now six technique rooms and enrolment increased from 160 to 192 students, climbing to 200 over the next few years.

Central demos often took up the majority of class time, based on the premise that it would set the ‘gold standard’ of how each procedure ought to be performed. The students mimicked what was being shown in the central demos; however, if tutors attempted to correct students as the central demo was occurring, it was distracting to the other students in the room. The other problem was that the central demos had to be delivered twice so that each student got a chance to be the doctor.

If there was time after the central demo, each tutor would provide a ‘mini central demo’, allowing their students to see each procedure more easily and to ask questions for clarification. Once completed, students used what little time remained to practice what they were shown, taking turns as one student assumed the role of ‘doctor’ and the other student assuming the role of ‘patient’. Tutors would coach the students, providing real-time feedback on their performance. Each class ran basically the same way, with some classes set aside for practice time without central demos. Students changed groups every three months from one tutor to another.

Unlike many other chiropractic educational programs that are divided into trimesters or quarters, CMCC is scheduled on a yearly basis (e.g. Year I, Year II), running from August to May. For many years, each of the three pre-clinical academic years was divided into four modules. Examinations of lecture-based courses were scheduled during each module. Technique exams were scheduled prior to the exam periods in each module. For technique exams, students were instructed to sign up for a

15-minute time slot with a classmate and would be tested by the tutor they had been with for the previous several weeks. If the procedure to be tested was something simple such as identifying superficial spinal or postural landmarks the tutor used a grading checklist. If the procedure to be tested was more complex, such as mobilizations or spinal manipulations, students were assessed using a more detailed grading checklist populated with a group of subskills commonly used at all chiropractic programs (Figure 1). This observation is based on the involvement some of the authors had with the Technique Consortium, a group of technique faculty representatives from American and Canadian chiropractic programs under the auspices of the Association of Chiropractic Colleges.<sup>1</sup> Using this checklist, student performance was converted to a numerical grade, and a student had to achieve a passing grade of 60% to proceed to the next academic year. If a student received a failing grade – less than 60% - they were required to be re-tested by the next tutor until they received a passing grade.

- Indications/ contraindications
- Patient position
- Doctor position
- Contact Hand
- Stabilization Hand
- Line of Drive
- Joint Slack/ Pre-manipulative tension
- Thrust

Figure 1.

*Subskill rubric used to grade spinal manipulation c1994*

### **Areas of concern**

Over the years, the technique faculty in general, and the authors of this article in particular, identified three main areas of concerns during tutor meetings. These were: length of central demos; lack of consistency between tutors with respect to demonstrating each chiropractic manual skill and; lack of consistency between tutors during testing.

### **Refining central demos**

Although they filled an important pedagogical role, it was hard to argue that most central demos in courses that had practical labs (technique, orthopedics, clinical diagnosis,

anatomy) monopolized too much class time. Moreover, having to do central demonstrations twice meant that individual student/tutor interaction time was not being optimized. The second issue was that when the central demos was over, tutors demonstrated their own version of the procedure. Of course, the tutor version was based on optimizing their own anthropometrics (e.g. height, weight) and not necessarily those of the individual students in the group. Alternately the versions may have been based on injuries acquired by the tutor. Finally, because of these variations, tutor assessment of student performance was based partially on the tutor's version of the procedure. Therefore, it was difficult for a student to know what was expected of them

This led Ross, the technique department chair at the time, to declare central demos would be eliminated. Unfortunately, this had the unforeseen consequence of making the variability between tutor demonstrates worse. Each tutor conducting central demos of different content and different time lengths and demonstrating each procedure differently. Even though this is arguably the best way to teach technique since it reflects the variability of how each chiropractor provides manual care to patients in the real world, it seemed to us that some students were not ready to try to assimilate various versions of the same procedure and then determine what worked best for their own anthropometrics. A hybrid solution was needed.

Central demos would be reserved only for complex psychomotor skills, such as high velocity, low amplitude spinal manipulative therapy (HVLA-SMT), deferring simpler procedures to the tutors to demonstrate on their own and at their own pace. To further enhance the learning opportunity during central demos different tutors would be invited to demonstrate how they performed each procedure, since the delivery of some procedures, most notably anterior thoracic and side-posture lumbopelvic manipulations (SPLM), varied significantly between tutors based on the anthropomorphic differences between the doctor and the patient. Moreover, some tutors had accrued various injuries throughout their career providing patient care (e.g., shoulder problems, discopathies) and had to modify their delivery of this or that procedure, modifications deemed worthwhile to share with students. In order to minimize any confusion among students, very few variations were demonstrated in Years I and II, reserving the introduction of the majority of

these variations to Year III, as students approached their internship.

During the summer months when classes were not in session, tutors were video recorded, demonstrating how they performed each procedure. When technique classes resumed, these recordings were televised to each room on a continuous loop, allowing students to observe them during class time after a central demo. Students were also able to access these videos on their own time. As the broadband of the college expanded, these video recordings became the equivalent of a virtual library that students could access at home. Eventually these recordings were embedded into course outlines and linked to daily lesson plans and, years later, were used to create a technique manual in DVD format that showed stationary photos as well as the real time videos.

#### *Lack of consistency between tutors during student assessment*

As tutors assessed the performance of students, it was recognized that there were inconsistencies from one tutor to another. This problem was captured by Robert Cooperstein, Chair of Research and Technique at Palmer West Chiropractic College for over 30 years when he famously opined during a meeting of the Technique Consortium:

*"I alone grade all the students in my technique class. This means it has 100% reliability... but 0% validity."* (Gleberzon, personal communication).

This lack of consistency of how each procedure was performed could lead, in turn, to different grading scores by each tutor, with some tutors developing a reputation as being overly lenient (the 'doves') and other being overly harsh (the 'hawks'). This problem was solved by two interwoven solutions: (1) Refining CMCC-centric technique manuals and (2) Grading by Panel.

#### *Refining CMCC-centric technique manuals*

Chiropractic has been described as a science, a philosophy and an art, and the artistic element of the profession is nowhere more evident than how each practitioner approaches patient management, from care planning to the selection of the multitude of permitted treatment options to how each procedure ought to be optimally delivered. Although it is expected that no two tutors would deliv-

er a complex procedure such as HVLA-SMT identically each tutor could not set their own expectations on how each procedure in the curriculum ought to be performed. The solution was to create and continually refine versions of technique manuals that described and illustrated how each procedure taught at CMCC should be performed, allowing for certain variations, thus creating a gold standard against which all students were judged.

The first CMCC technique manual demonstrating spinal adjustments offered in the program was authored by Szaraz<sup>2</sup> in 1984 (Figure 2). Titled '*Compendium of Chiropractic Technique*' it incorporated soft tissue therapies, mobilizations and adjustive procedures of the cervical, thoracic and lumbopelvis, including the coccyx. Each procedure was described in terms of patient position, doctor position, contact hand, stabilization hand, line of drive and type of thrust. Each procedure description was accompanied with photographs using live subjects. Around that time, Jamie Laws authored a manual for extremity procedures, which the authors believe may have been the first time these procedures were taught at CMCC. A few years later, Daniel Proctor and Greg Ruhr updated the extremity manual and Jane Mannington, who was the department chair for many years, updated the Szaraz Compendium.

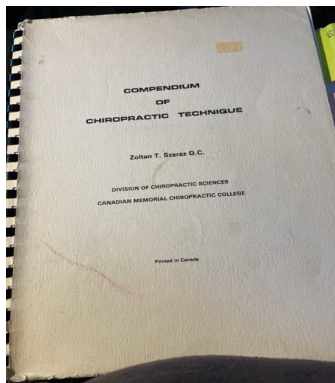


Figure 2.  
*Compendium of Chiropractic Techniques*<sup>2</sup>

As the curriculum changed a new, updated manual was needed. Over the summer of 2008, Gleberzon and Ross created an inventory of each technique procedure taught during the undergraduate program at CMCC. Similar to how Part IV of the National Board of the Chiropractic Examiners (NBCE) exam was created, they described

each procedure in generic terms and, with input from the rest of the faculty, included as many variations as deemed appropriate. Due to technological limits, the first published manual only had photographs alongside each written description. In 2014, with changes in technology the aforementioned video library was added to an updated version of the Manual (Figure 3) included a DVD, and later a flash-drive, containing real-time videos of all mobilizations and manipulation taught in the program.<sup>3</sup>



Figure 3.  
*Manual of Diversified Diagnostic and Therapeutic Procedures (2014)*<sup>3</sup>

### Grading by panel

Over the years the faculty agreed there were two types of exam content: simple and complex. Examples of simple content would be spinal and postural landmarks, motion palpation and joint play analysis. Testing of those procedures would continue to be conducted by a single tutor during class time. However, for the more complex content of myofascial treatments, mobilizations and HVLA manipulations of the spine and peripheral joints, a three-person panel would be used during designated examination periods (Authors' note: According to Kinsinger, a two-person team was used to test students during high stakes exams in the mid-1980s but had been discontinued over time for unknown reasons (Kinsinger – personal communication)).

During the higher stakes testing periods there were four testing stations in one room. Typically, one station examined cervical and thoracic procedures, one station examined lumbar and pelvic procedures, one station examined procedures directed to peripheral joints and one station

used the Force Sensing Table Technology (FSTT®) (discussed in Part 2 of this series of articles). All 12 tutors in each course were involved in testing and grouped into four groups of three.

During the testing cycle, a pair of students moved from station to station. A designated amount of time was set aside for completion of all tasks at each station (typically five minutes for both students). In an attempt to increase the fairness of grading at each station, course coordinators would mix the ‘hawk’ and ‘dove’ tutors together. It was hoped both the ‘hawks’ and the ‘doves’ would become more objective over time, lest they continue to be seen as outliers. Tutors were asked to grade each student independently and not consult with each other during testing. In this manner tutor a would not be influenced by the other two assessors opinions. The mark was then the summation of all three tutors assessment of student performance.

### *Determining course content*

Course content of technique labs at CMCC was essentially a chimera of historical elements, a reflection of the preferences of academic decision-makers at any given point in time and an homage to authoritative textbooks such as the ‘Technic Manual’ authored by Al States<sup>4</sup> or, years later, textbooks by Bergman and Peterson<sup>5</sup> or by Byfield<sup>6</sup>.

An iterative approach was also used, whereby ‘home-grown’ procedures deemed clinically dubious were gradually marginalized and procedures used by the majority of chiropractors were emphasized, based on the inventory of testable procedures from Part IV of the NBCE. The results of a series of surveys conducted by Gleberzon and Kent Stuber were also used.<sup>7,8</sup> Those surveys asked CMCC graduates to indicate, based on a provided list of all diagnostic and therapeutic procedures taught in the undergraduate program, which they used and how often they used them.<sup>7,8</sup>

Content was scaffolded over the three undergraduate years, where simpler procedures (postural assessment, palpation, joint play analysis) were introduced at the beginning of Year I and more complex procedures introduced later in the program, as students accrued more psychomotor skill.

The 1990s witnessed the elevation of muscle-based therapies across the profession. While Nimmo technique and trigger point therapy were mainstays in clinical prac-

tice for decades myofascial-focused procedures such as Active Release Techniques® and instrument-assisted techniques such as Graston® became tremendously popular (see <sup>9</sup> for description of these technique systems). Since these specific techniques were not offered at CMCC students sought them out at weekend seminars at their own expense. In private practice, offering these techniques became *de rigueur* at athletic-focused or rehabilitation-based clinics. CMCC included manual (myofascial) and instrument-assisted (Graston) procedures in technique class starting in 2005, although the latter was terminated once the agreement with the organization donating the Graston tools ended a decade later. After that, depending on the academic year, a few technique labs were set aside for instruction in instrument assisted soft tissue mobilization (IASTM), and IASTM was often taught in rehabilitation courses.

### *To thrust or not to thrust*

In the early 1990s, it was CMCC technique policy that students were not allowed to deliver an HVLA thrust to other students during class time or during examinations until midway through Year II. This meant faculty were grading students on ‘mock’ thrusts absent the most important components of spinal manipulation: speed and force. By the late 1990s, however, it was agreed this ‘no-thrust’ policy had to be lifted

At first, two prone thoracic manipulations (Cross-bilateral and Carver manipulations) were introduced toward the end of Year I, and students were permitted to deliver a full thrust during both class time and testing. Each subsequent year more HVLA-SMT procedures were introduced earlier and earlier in the program. By the 2020s students were taught prone thoracic manipulations by week six of Year 1 and were introduced to over 10 different spinal manipulations that year, excluding cervical SMTs.

### *Toward qualitative evaluation methods*

*Question:* What exactly does a 74% in technique class signify? Does it mean that 74% of the procedures were done correctly. Or does it mean that the student was 74% as good as the gold standard. But what is the gold standard? Is it a practicing chiropractor or is it an ideal Year I student?

*Answer:* The authors of this article do not know. There is no logical answer. Hence the students did not have a

requisite knowledge to know what was expected of them to be classified as competent. Ross was also troubled by the fact a student could demonstrate excellence in one procedure, perform poorly during another, and yet still pass the examination because the grades from both procedures were averaged together. In other words, even though a student had not demonstrated minimal competence in all procedures in the course outline they could still proceed to the next academic year.

Recognizing this conundrum, Ross conceived a qualitative grading rubric that required students demonstrate minimal competency in all tested procedures. Criteria in this rubric were converted to a numerical grade. The goal here was to make sure that the tutor graded based on whether or not they observed expected behaviors. The danger of the tutor assigning an actual number was that the doctor may have a number in mind and grade according to that overall numerical assessment.

After its inaugural implementation, the conversion to a numerical grade was abandoned since it caused more problems than it solved and students' performance was assessed only qualitatively. Students received either a pass or fail grade on their academic transcripts.

There were three qualitative categories used to score a student's performance: No correction (NoC); Minimal Correction (MiC) and; Major Correction (MaC). As implied, if a tutor assigned a grade of NoC to a demonstrated procedure it meant they perceived it was performed to a standard of minimal competence, and that all the subskills of that demonstrated procedure were performed adequately. A procedure assigned a MiC meant that the tutor perceived the procedure could be performed somewhat better, but any deficiencies observed were not significant enough to trigger the necessity of it being retested. Lastly, if a tutor assigned a MaC to a demonstrated procedure – or to a subskill of that procedure – it meant there was something significantly problematic with its delivery and that the student would be required to be retested.

To reinforce the MaC category a set of 'fatal flaws' were developed, flaws deemed so problematic that, if demonstrated during testing, they automatically required the procedure be retested (Figure 4). Additionally, if the tutor perceived the student acting as the doctor failed to maintain a professional boundary with the student acting as the patient the tutor would immediately stop the student from continuing to perform the procedure. This

presaged the ascension of competency-based evaluation methodology in education.

- No procedure demonstrated
- Incorrect procedure demonstrated
- Procedure may have no clinical effect
- Procedure may potentially injure the patient
- Procedure may potentially injure the doctor
- Doctor failed to maintain a professional boundary with the patient

Figure 4.  
*Fatal flaws necessitating retesting*

### *The 'Two out of Three' rule*

Imagine a student who learns they must be retested because they were ascribed a MaC to a particular procedure. Upon review of their test sheet, they learn that one tutor gave them a MaC in one subskill (e.g., line of drive) whereas another tutor gave them a MaC for another subskill (e.g., spinal contact). Understandably, the student would be confused and frustrated, not knowing which subskill to focus on in order to pass the retest.

To address this dilemma, Gleberzon, who became department chair after Ross, enacted a failsafe process whereby a student only had to reperform a particular procedure if two out of three tutors not only ascribed a MaC to a particular procedure but they had to identify the same subskill of that procedure as a MaC.

### *Robust remediation*

A new curricular design was implemented around 2003. Rather than be offered at different times throughout the academic year all courses offered in Year III were grouped into nine pain-based modules. In addition to other problems (e.g. a number of courses were not pain-focused), no specific plan was developed to remediate students who failed a module. Similar to chiropractic programs with quarters or trimesters, when a student failed a course within a module they were put on a 'special schedule' that allowed them to attend the classes of the next module while auditing and being retested in the course(s) in the previous module they failed. There was no set limit on the number of opportunities a student was given to pass a previous course in a module, ultimately becoming a burden on the faculty.

To solve this problem in technique, Gleberzon developed a robust remediation system, adopting elements from his experience on the provincial regulatory body (the College of Chiropractors of Ontario (CCO)), which included a Specified Continuing Education or Remediation Plan (SCERP) (Figure 5).

During Step 1 of the remediation process, students were required to attend one hour of out-of-class technique class with a faculty member (most often with senior tutor Greg Ruhr) and one hour in the Force Sensing Table Technology and Simulation Lab (FSTT@Sim Lab) (described in Part 2 of this series of articles). They were graded by a new group of three tutors and only had to perform the procedure(s) they were ascribed MaCs for, with one exception: If they received MaC for four or more procedures they had to repeat the entire test.

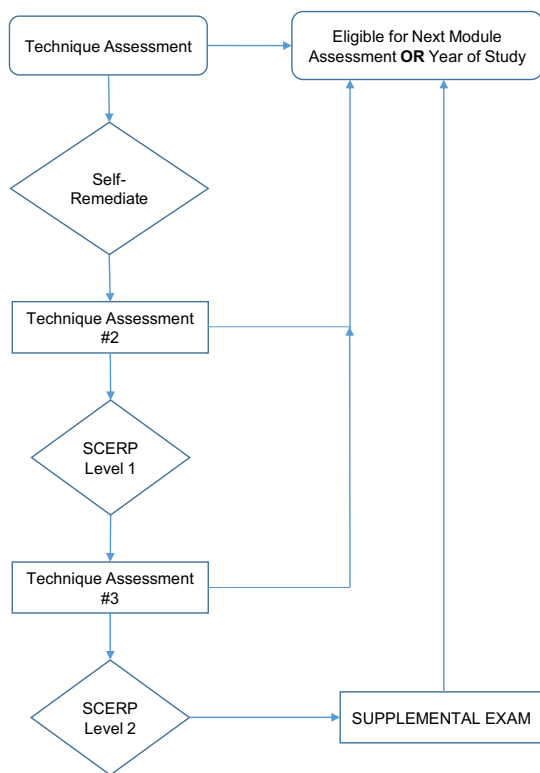


Figure 5.  
Technique remediation flow-chart

If two out of three tutors ascribed MaC to a student during retesting they moved to Remedial Step 2, which was similar to Step 1 except they had to attend more practice time prior to being tested. The third evaluation was video

recorded. If unsuccessful again students were eligible to be re-tested one more time before being assigned a failing grade and, barring successful appeal, had to repeat the academic year. This is why video recording the student's performance was important - students facing repeating an academic year typically appealed the grade or pursued legal action, sometimes both.

### To feedback or not to feedback

Initially, test feedback was given at the beginning of the next module, during which time the testing sheets were given to students for their review; however, the time between their performance and this feedback could be a few weeks. Understandably, by that time the student did not remember what they did during the performance assessment and had to take the word of the assessors as an accurate reflection of their performance.

The tutors experimented with giving students immediate feedback, during testing. Each of the three tutors would give contemporaneous feedback to students while they were at that station immediately after their performance, prior to moving to the next testing station. Well. This was of bereft of benefit to any party.

While the vast majority of students appreciated the immediate feedback and accepted it as a learning experience whether it was positive or negative, receiving negative feedback evoked a strong emotional response from some of them. Some students were so distraught it effected their performance at subsequent stations. Clearly a new plan had to be conceived and implemented, one that maintained the elements of contemporaneous feedback while avoiding the potential of evoking negative reactions from students during testing.

A new feedback mechanism was implemented. Immediately after they completed their entire technique assessment, the course coordinator (who was not involved in testing) would meet with each student privately to review their grading form with them. This allowed students to receive immediate feedback on their performance from the testing tutors and it allowed them to know whether or not they had to be retested on this or that procedure, or if they had to reperform the entire test, provided the procedure in question met the 'two out of three' rule.

### Assessing our new evaluation process

From the perspective of the faculty, the changes made



to course structure, evaluation and remediation was successful; however we lacked any hard data to support the faculty's perspectives. In order to do a deeper dive into students' perception of the new testing process a unique 11-item paper questionnaire was developed and distributed to students immediately after they received feedback from the course coordinator.<sup>10</sup> The questionnaire used a five-point Likert scale anchored on the left with 1 (very unsatisfied) to 5 (very satisfied) on the right. We obtained ethics approval and ensured student responses were anonymous. The results of this survey were presented at DC17, a joint ACA-WFC-ACC conference held in Washington, DC.<sup>10</sup>

The response rate for Year II was 80% and for Year III was 100%. When asked, over 80% of both Year II and III students 'Strongly Agree or Agreed' that the new testing format was '*more fair*', and over 80% of Year II and two thirds of Year III students thought it better graded their skills. At least half of all students 'Strongly Agreed/Agreed' the new testing format better identified poor performers and their sub-skills that needed improvement, that it was more objective, and that it held students to a higher academic standard and would make them better chiropractors.<sup>10</sup>

In addition, roughly three-quarters of Year II and III students 'Strongly Disagreed/Disagreed' the new format was '*too confusing*' or '*too complicated*'. More than half of students did not want to return to the previous assessment format.<sup>10</sup>

### *Acknowledgement of risk*

During a visit of the Technique Consortium to the chiropractic program at the University of Bridgeport in 1999, Gleberzon learned there was an administrative requirement to have students read and sign a consent form prior to embarking on technique classes, similar to the requirement to have a patient sign an informed consent form prior to beginning care.

After clearing several legal and curricular hurdles, a similar requirement was passed by CMCC's curriculum committee in 2018. Going forward, students were required to read and sign a broader "Acknowledgment of Risk" form during their first week of class, prior to beginning any course with a practical lab that had a material risk of harm (e.g. technique, orthopedics, clinical diagnosis and anatomy). The form outlined all the potential

injuries a student could experience during participation in any of these practical labs.

### *Technique class during Covid*

It is certainly trite to say Covid changed everything. From how we work, play, learn, access services (especially healthcare) and goods of all kinds all underwent fundamental changes.

de Luca and her colleagues surveyed 16 separate faculty at 13 different chiropractic programs (including CMCC) to ascertain how they each managed the challenges created by the pandemic.<sup>11</sup> They identified five, interconnected themes: immediate response; move to online delivery; impact on learning and technology; additional challenges faced by educators and; ongoing challenges post lockdown.

CMCC was fortunate since it could leverage the academic calendar to its advantage when the pandemic started. The lockdown in Ontario began March 17, 2020. The March Break was scheduled to begin the next week and exams were scheduled two weeks after that. In the undergraduate technique classes, three of the four scheduled formative practical exams had already been conducted, which was deemed sufficient to assign final grades to students.

In-person written exams in courses without practical labs were conducted online. When classes resumed in April, lectures and facilitated small group tutorials were easily converted to virtual video platforms such as Zoom or Panopto, although this did require a steep learning curve by those faculty who were not especially tech-savvy. But teaching hands-on psychomotor skills during Covid presented a challenge since it was not conducive to an online learning platform.

To continue instruction in technique a series of online tutorials facilitated by technique tutors were scheduled. Tutors led students through discussions of various topics germane to technique. Topics included: injuries to students during technique class; valid methods to identify a clinical target; ability to specifically target a vertebral segment during HVLA-SMT and; clinical alternatives to HVLA-SMT (e.g. instrumented-assisted adjusting, pelvic blocking, flexion-distraction).

The return to in-person labs was a very complex, multi-step process, since it required abiding by changing directives by the provincial Ministry of Education, the prov-

vincial Ministry of Health and requirements from CCO, since all faculty were licensed chiropractors. Class sizes had to be reduced from 36 student in a room to nine. This required hiring additional technique faculty and adding several teaching hours to the 2020-21 academic year curriculum for Years II and III. Curricular planners also had to repurpose the gym and lecture rooms to accommodate the additional student groups necessitated by these changes. As the reader can no doubt imagine, this proved to be an enormous challenge to curricular planners tasked with scheduling so many technique classes to accommodate all these requirements.

In each group of nine, student pairs had to maintain social distancing of two meters from each other. Students and tutors had to wear Personal Protective Equipment (PPE) including gowns, masks, latex gloves and goggles, as well as the liberal use of disinfectant. It took over a year before technique classes returned to a pre-Covid format.

## Discussion

This study used a qualitative research design, a design being used more and more in research of all kinds, including education of health professionals.<sup>12</sup> Qualitative research can be essential to the development, testing and implementation of interventions and is integral to evidence-based practice.<sup>13</sup> Qualitative methods provide an important source of well-grounded and rich descriptions, providing meaningful explanations of processes and allow for an exploration of beliefs, values and motives that explain why behaviour occurs, as compared to quantitative research that focuses on frequency, intensity and duration of behaviour.<sup>12,13</sup> Castlebury and Nolen opined the primary aim of qualitative research is “*to gain a better understanding of phenomenon through experiences of those who have directly experienced the phenomenon, recognizing the value of participants’ unique viewpoints that can only be fully understood within the context of their experience and worldviews.*”<sup>12p807-808</sup> Overall, qualitative research allows for gaining perspective of issues by investigating them in their specific context and focusing on drawing meaning from the individuals who experienced them.<sup>14</sup>

## Limitations

This study has many limitations, chief among them is it relied on the collective memories of the four authors. It is

possible the authors misremembered some of the circumstances surrounding certain topics explored in this article. Recall bias is also a possibility, since there is a tendency for individuals describing past events to deny less attractive aspects of their behaviour.<sup>15</sup> It is also possible certain milestones were not discussed because the authors did not consider them sufficiently relevant. In other words, a different group of authors may have prioritized different events in their narrative review.

## Summary

Over our collective 120 years in the technique trenches, the authors of this paper had the honor and privilege of working alongside over 50 dedicated technique faculty. Together, they have educated a large majority of all Canadian chiropractors in practice. At the risk of being obsequious, it safe to say the profession owes them all a great deal of gratitude.

It is our sincere hope faculty and curricular planners at other accredited chiropractic educational programs will learn from our experiences and potentially strengthen their pedagogical approach to teaching chiropractic manual skills.

What will technique classes look like in the years to come? It is hard to predict. But one thing is for certain. To paraphrase Arthur C Clarke, the future will not only be different than we imagine, it will be different from what we *can* imagine.

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