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Development of a clinical skills remediation program for chiropractic students at a university

Suzanne D. Lady, DC and Leslie A.K. Takaki, MS

Objective: An important goal of chiropractic educational institutions is to ensure that all graduates reach an acceptable level of clinical competency and thus institutions are equipped to offer traceable remediation when skills fall below certain benchmarks.
Methods: Working with key individuals in the faculty, administration, and assessment department, a process of remediation was created and materials were produced that could be used by faculty and assessment staff to focus on a student's lack of knowledge, technique, or documentation in specific clinical skill areas. The primary goal was to create an individualized remediation plan that suits the specific needs of the student.
Results: Utilization of the remediation center continues to increase. Referrals to the center for fiscal years 2015, 2016, and 2017 were 60, 125, and 126 students, respectively. Retesting rates after remediation continue to be high, with 98.3%, 95.2%, and 95.8% for fiscal years 2015, 2016, and 2017, respectively.
Conclusion: We developed and implemented a chiropractic remediation program to satisfy the need for objectively identifying and remediating clinical skill deficiencies. This remediation program experienced an increase in use in its initial 3 years of operation, indicating more inclusion of the program across the departments, clinics, and assessment. The outcome of remediation is still not clear because there are no consistent assessment measures in place to determine pre- and postremediation student performance.

Key Indexing Terms: Chiropractic; Education; Learning; Clinical Competence

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INTRODUCTION

The Council on Chiropractic Education (CCE), the national accrediting body for doctor of chiropractic (DC) degree programs, lists as 1 of its responsibilities "promoting through the accreditation process . . . the safe and effective delivery of quality health care to patients." Clinical competency, defined as "a combination of skills, knowledge, attitudes, values and abilities that underpin effective and/or superior performance in a professional/occupational area,"[1] is the sought-after outcome of most chiropractic curricula. This is what assures the public that the chiropractic care they seek is being delivered by competent practitioners. CCE encourages chiropractic colleges and universities to use data from remediation as examples of evidence related to curriculum, competencies, and outcomes assessment and to rely on this reporting during accreditation cycles.

There are inherent flaws in chiropractic education that can create obstacles for students working toward mastering clinical skills. Unlike medical school, most students who graduate and become chiropractors do not have a residency program in which to continue honing their clinical skills. Instead, students have a 1-year preceptorship or externship allotted to helping them develop clinical skills before they begin their practice.[2] Clinical skill development is expected to occur in the chiropractic curriculum before graduation, making the need for remediation during the educational process essential. Acquiring clinical competency is an individual process, and as expected, some students struggle when obtaining clinical skills and knowledge. Remediation for these learners is a necessary function for helping ensure that clinical competence has been achieved.

While most students perform well in the DC program at the University of Western States (UWS), some struggle to master clinical skills developed throughout their education. Historically, remediation was conducted unofficially in the college of chiropractic without detailed documentation processes in place to monitor and inform remediation practices. Creating an official remediation process with proper databases and documentation to track a student's

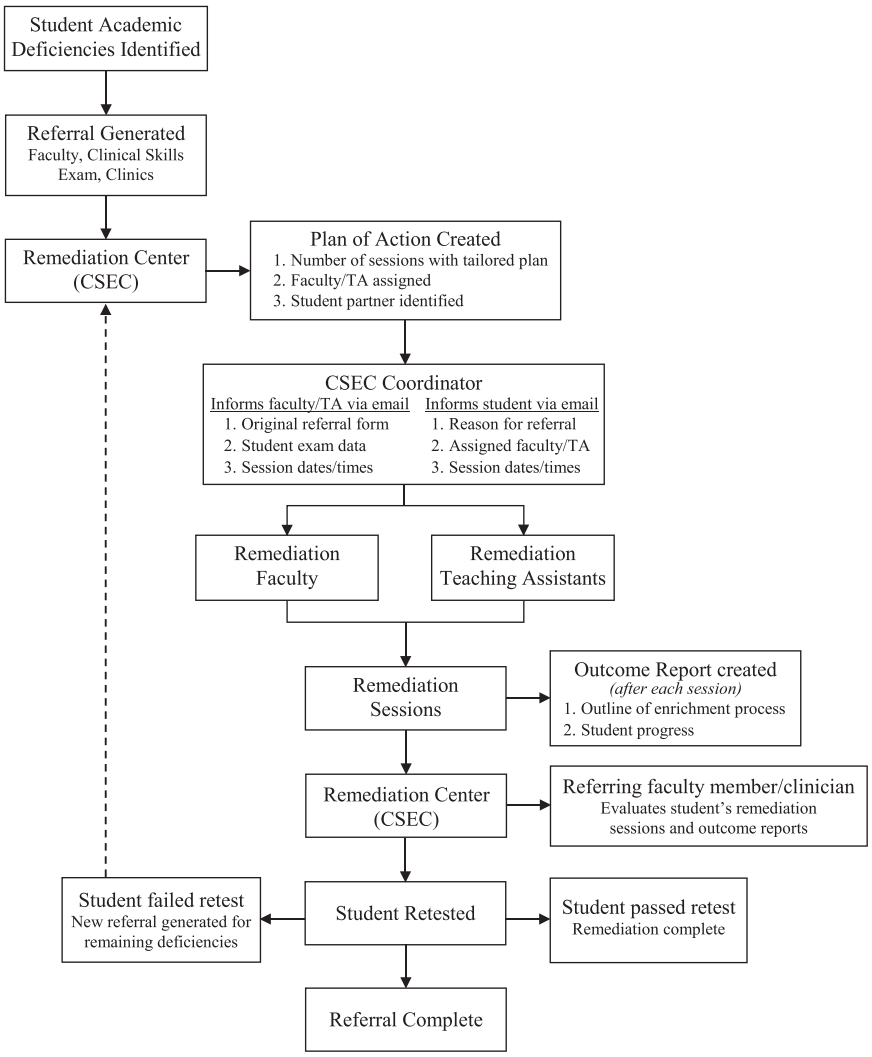

Figure 1 - Remediation flow chart.

skill mastery is recommended.[3–5] The body of evidence for remediation is growing in the medical education literature,[6] but currently there is no best practice for remediating clinical skills and knowledge within chiropractic education.

The goal of this article is to describe the development and implementation of a clinical skills remediation program and the lessons learned from the process. To our knowledge this is the first article describing details of a remediation program within a chiropractic institution.

METHODS

Purpose and Organization

The UWS is a nonprofit institution that matriculates on average 386 DC students every year. A process was needed to objectively communicate clinical skill deficiencies and plan a course of remediation, allowing for continued academic and clinical success. To meet this need, the Clinical Skills Enhancement Center (CSEC) was created in fall 2014.

CSEC serves the purpose of remediation for students who have demonstrated specific weaknesses in clinical laboratory courses or clinical internship series. Areas of clinical skills remediated are patient history, physical examination, treatment/management, manipulation skills, diagnosis/differential diagnosis, ordering special studies, and interpersonal/communication skills. The goal is to provide enrichment experiences for students to improve clinical skills, allowing for continued academic and clinical success.

CSEC is managed by a department chair faculty member and is clerically supported by 1 university staff member who handles scheduling, data collection, and clerical duties. CSEC remediation is performed by licensed DC faculty members and experienced, licensed DC teaching assistants (TAs) who are also in clinical practice. Selection of faculty/TA remediators occurs through department chair and dean recommendations. TAs are selected if they have been involved in clinical or technique labs and have a minimum of 3 years' experience. There is currently no formal training involved.

Process of Remediation

The remediation process occurs over 5 steps: identification of deficiencies, referral to CSEC, remediation planning, remediation, and retesting (Fig. 1).

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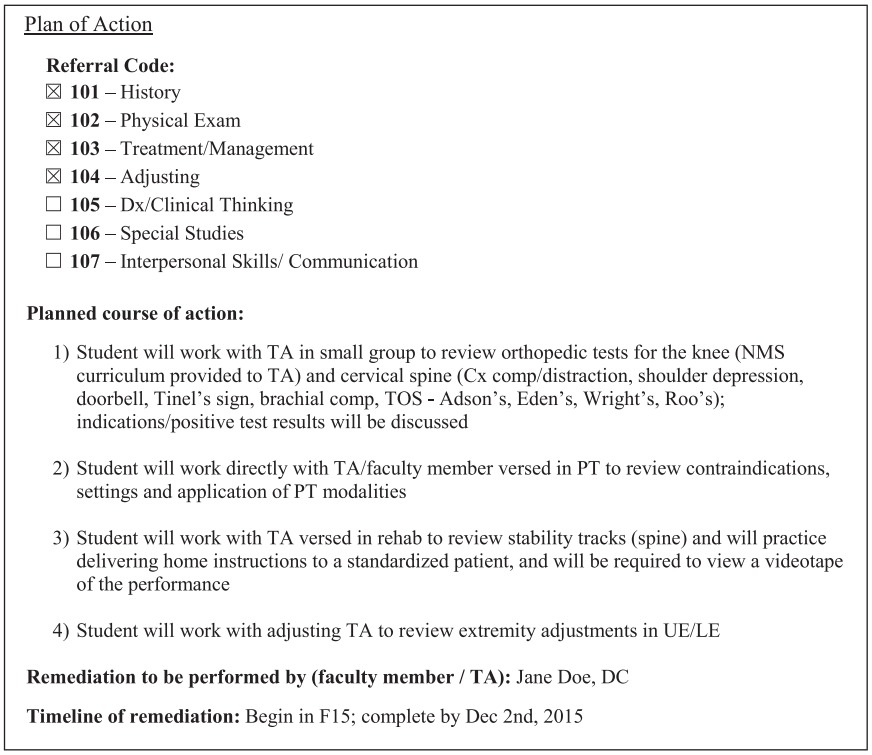

Plan of Action

Referral Code:

☒ **101** – History
☒ **102** – Physical Exam
☒ **103** – Treatment/Management
☒ **104** – Adjusting
☐ **105** – Dx/Clinical Thinking
☐ **106** – Special Studies
☐ **107** – Interpersonal Skills/ Communication

Planned course of action:

1) Student will work with TA in small group to review orthopedic tests for the knee (NMS curriculum provided to TA) and cervical spine (Cx comp/distraction, shoulder depression, doorbell, Tinel's sign, brachial comp, TOS - Adson's, Eden's, Wright's, Roo's); indications/positive test results will be discussed

2) Student will work directly with TA/faculty member versed in PT to review contraindications, settings and application of PT modalities

3) Student will work with TA versed in rehab to review stability tracks (spine) and will practice delivering home instructions to a standardized patient, and will be required to view a videotape of the performance

4) Student will work with adjusting TA to review extremity adjustments in UE/LE

Remediation to be performed by (faculty member / TA): Jane Doe, DC

Timeline of remediation: Begin in F15; complete by Dec 2nd, 2015

Figure 2 - Clinical Skills Enhancement Center plan of action.

Step 1: Identification of Deficiencies

Initially, CSEC receives a referral from a faculty member who has identified specific student deficiencies. Weaknesses are identified by the instructor or clinician through clinical skills assessments (CSAs), failed exams, or poor clinical performance.

Step 2: Referral to CSEC

The deficiencies are captured using a referral form (Appendix A, available online at www.journalchiroed.com). This form allows for identification of either a knowledge, technique, or documentation deficiency in each category of clinical skills. Referrals must be submitted to CSEC after deficiencies are identified through midterm or final exams, Objective Structured Clinical Examination (OSCE)-type exams, clinical entrance exams, or observed clinical interactions.

Step 3: Remediation Planning

The CSEC manager analyzes the referral form and designs a plan of action (Fig. 2) that is tailored to the individual student. The manager also assigns the number of sessions and instructor(s) who will facilitate the remediation sessions and works closely with the remediation faculty/TAs on creating the content of the sessions. This detailed plan is noted on the plan of action form. Lastly, students who are in remediation for the same deficiencies are identified and paired when appropriate (eg, adjustive technique remediation).

Step 4: Remediation

The faculty/TAs involved in conducting the sessions will follow the plan of action for each specified deficiency. For example, if a student was referred for poor history, physical exam, and diagnostic skills, the student then performs these skills, with a faculty member/TA serving as a patient for the student. Often these encounters are video recorded and reviewed with the student immediately following the activity.

In cases of knowledge deficits for clinical information, students are given a tool that they complete as homework and bring back to the faculty member/TA at the next session to discuss and review any knowledge gaps that are evident. This tool specifically helps a student review the clinically relevant information for a condition. Sections of this tool include description of the condition in 1–2 sentences, the prevalence of the condition, the population in which the condition occurs, the most important clinical findings from a patient's history, the physical examination, the ancillary studies often ordered, and the condition's prognosis and treatment.

When each session is finished, the faculty member/TA completes a detailed outcome report (Fig. 3) outlining the enrichment process and how the student progressed through the plan.

Step 5: Retesting

Once all sessions are complete, the student is ready to be reassessed. This involves retesting the student on the skills the student originally failed. In the case of clinician

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Date of Report: 10/5/2015 **Submitted by:** Jane Doe, DC

Completed remediation: ☒ YES ☐ NO SHOW

Outcome Report: Soft Tissue and PT: Student improved understanding and application of cervical Janda movement patterns and lumbar stabilization protocol; student was video-recorded in the SAC delivering home instructions to a patient, which needs to be reviewed later and self-assessed. Student improved in understanding and application of US, high volt, IFC and cold laser, as well as contraindications and usage.

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Date of Report: 10/12/2015 **Submitted by:** Jane Doe, DC

Completed remediation: ☒ YES ☐ NO SHOW

Outcome Report: Cervical and Knee orthopedic tests: Student was in small group to review orthopedic tests for the knee (meniscal, stability tests, patellar tests) and cervical spine (Cx comp/distraction, shoulder depression, doorbell, Tinel's sign, brachial comp, TOS - Adson's, Eden's, Wright's, Roo's)

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Date of Report: 10/19/2015 **Submitted by:** Jane Doe, DC

Completed remediation: ☒ YES ☐ NO SHOW

Outcome Report: UE & LE adjusting: Student showed a proficient level of understanding and demonstration of the adjustive options in the upper and lower extremity.

Figure 3 - Clinical Skills Enhancement Center remediation session outcome report.

referrals, the student will be reassessed in a clinical setting. The referring faculty is required to notify the coordinator that the student has either passed the exam, will need to repeat that course, or needs further remediation for remaining deficiencies. Students cannot be referred again for the same deficiencies; they must repeat the course if remediation was unsuccessful. Success is defined by the student retaking and passing an exam or other evaluation method (eg, clinician-observed patient encounter).

RESULTS

Fiscal year 15 (FY15) was the pilot rollout for CSEC, and accordingly there was a substantial increase of referrals from FY15 ($n = 60$) to FY16 ($n = 125$). In the 1st year, referrals were accepted only from high-stakes CSA exams and a few technique courses to test the process. Referrals leveled out from FY16 ($n = 125$) to FY17 ($n = 126$) once CSEC had been operationalized for all clinical skills courses (Table 1).

It is not surprising that the areas of adjustive technique and physical exam are the areas of enrichment most often eliciting referrals: 144 and 115, respectively, over this 3-year period, followed by treatment/management ($n = 55$) and patient history ($n = 53$). The motor skills required for technique and physical exam skills often take the longest to master, and therefore more referrals are expected to come from these areas. Referrals for physical exam most often arise from didactic instruction and high-stakes OSCE exams, and referrals for adjustive technique arise primarily from didactic lab instruction and clinical internship. Referrals for patient history, case management, and diagnosis fall in the middle tier of frequency, whereas referrals involving ancillary studies and interpersonal skills are relatively infrequent (Table 2).

In FY17 the number of CSEC sessions conducted was relatively consistent, with an average of 73 sessions per term (60–81) (Table 3). Of the 291 total sessions conducted in FY17, TAs conducted 215 sessions and faculty members conducted 76 sessions. CSEC used a total of 7 TAs and 5 faculty members in FY17, averaging 7 sessions per faculty member/TA. Faculty members who conduct CSEC sessions are assigned credit hour equivalents (CHE) for this work as a component of their annual bargaining unit workload assignment. TAs are paid for their hourly contributions.

Most students passed their retest following completion of their individualized CSEC remediation program. The

Table 1 - Sources of Clinical Skills Enhancement Center Referrals for 3 fiscal years

Referral Source	FY15	FY16	FY17	3-Year Total
CSA–practical	20	13	10	43
CSA–radiology	0	30	29	59
Chiropractic sciences	13	51	56	120
Clinical education	22	21	15	58
Clinical internship	5	10	16	31
Total	60	125	126	311

FY, fiscal year; CSA, clinical skills assessments.

Table 2 - Clinical Skills Enhancement Center Areas of Enrichment Annual Outcomes

Areas of Enrichment	FY15	FY16	FY17	3-Year Total
History	17	26	10	53
Physical exam	34	47	34	115
Treatment/management	20	17	18	55
Adjustive technique	33	50	61	144
Diagnosis/DDX	4	20	14	38
Ancillary studies	0	9	1	10
Interpersonal skills	2	7	6	15
Totals	110	176	144	430

DDX, differential diagnosis.

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Table 3 - Number of Enrichment Sessions Conducted by Each Faculty Member/TA (FY17)

Faculty/TA	Total	SU-2016	FA-2016	WI-2017	SP-2017	Avg/FY17
TA no. 1	41	14	10	9	8	10
TA no. 2	52	—	20	17	15	17
TA no. 3	50	—	13	10	27	17
Faculty no. 1	11	5	0	1	5	3
Faculty no. 2	1	1	—	—	—	1
TA no. 4	42	4	15	12	11	11
TA no. 5	6	—	—	—	6	6
TA no. 6	24	12	12	—	—	12
Faculty no. 3	5	5	—	—	—	5
Faculty no. 4	6	6	—	—	—	6
Faculty no. 5	53	22	11	11	9	13
Total FY17 sessions	291	69	81	60	81	73
Staffing		SU-2016	FA-2016	WI-2017	SP-2017	
TAs		3	5	4	5	
Faculty		5	1	2	2	
Average no. of sessions per student referral FY17		4.4	4.5	3.9	2.9	

TA, teaching assistant; SU, summer; FA, fall; WI, winter; SP, spring; Avg, average.

retest success rate for FY15, FY16, and FY17 was 98.3%, 95.2%, and 95.2% respectively. The high retest rate from the previous 3 years reflect that students perform better on their retake exams after individualized clinical skill remediation (Table 4).

DISCUSSION

Successes of the Program

The biggest strength of the CSEC program is providing structured remediation of clinical skills where none existed in the past. CSEC in turn is strengthened by the clear and concise doctor of chiropractic program course goals and student learning objectives that faculty have created using the CCE guidelines to specifically identify skill deficiencies. Without these clear goals and objectives, it would not be possible to judge whether a student is meeting clinical competency and therefore possible to pinpoint deficiencies. The development of the CSEC referral form helps to document these deficiencies, the remediation process, and eventually the outcomes of the remediation, something that was not monitored or tracked in the past.

Challenges of the Program

The outcome of remediation is still not clear. While the student retest rates are high, there are no consistent assessment measures used pre- and postremediation to determine whether the process was a success or a failure. Currently, considering only pass rates for retesting does not allow accurate assessment of the success of the remediation process.

Table 4. Student Success Rate on Retest Following Completion of Their Enrichment Sessions

Referrals and Success Rate	FY15	FY16	FY17	3-Year Total
Total no. referrals	60	125	126	311
Total no. pass on retake	59	119	120	298
Success rate on retest	98.3%	95.2%	95.2%	95.8%

CSEC is currently helping deficient students pass a retest of an exam and may be shortsighted in the shift from a numbers curriculum to a competency-based curriculum.

The goals of our remediation program do not embrace a mastery learning approach but instead are short term. This does not consider that we use a competency-based curriculum, with some students requiring longer periods of time to gain clinical competence. It might be possible that the remediation the student receives helps them only in the short term and does not have longer impacts on clinical skills mastery.[3] This process may need to be reimagined to fit within a long-term competency model of education.[3]

Another weakness is that we are very reliant on nonfaculty TAs for most of our remediation sessions. The available pool of faculty to participate is limited due to full-time teaching loads. Heavy reliance on TAs to conduct most of the remediation introduces potential for poor quality and inconsistency. Effective faculty/TA training with respect to remediation approaches and learning paradigms remains limited due to restricted resources and absent evidence in the literature for best practices for conducting remediation programs in chiropractic education.

Another important weakness is that CSEC is not equipped to diagnose learning disabilities or anxiety issues not previously identified by the Office of Student Services (or other experts) for the initial planning phase of remediation. These unidentified, underlying disabilities might affect clinical skill development and/or the ability to engage effectively in the CSEC process. Proactive communication and coordination between CSEC and the Office of Student Services needs to be operationalized.

Some students express anxiety about being referred for remediation and feel stigmatized by having to go through the remediation process. Some students reluctantly engage in the remediation sessions, which may limit the positive benefits from the prescribed additional support. The

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remediation process can often be time consuming for the student since they are scheduled to attend sessions outside their current class schedule the following term. This added time requirement may distract a student from concurrent coursework.

Opportunities for Improvement

Development of pre- and postremediation assessment rubrics would provide more clarity about the success of the remediation process.[7,8] This rubric could easily be added to the appropriate sections in the referral form that would reveal a global pre- and postremediation level of competency and be followed over time.

To improve remediation processes and tools, it will be important moving forward to recruit more available faculty for administering remediation and offer faculty/TA development in skills of coaching, implementing learning frameworks, and helping create active learning activities that engage the student.[3,9]

Currently CSEC is managed and coordinated by faculty and staff that divide their time with other duties. Consideration should be given to creating a permanent position for CSEC to ensure consistent faculty/TA training is occurring, as well as ensuring that the remediation processes operate smoothly.

Involvement of the Office of Student Services and Admissions will become more important in identifying learning disabilities or anxiety disorders to ensure that the planned course of remediation is meeting each student's needs.[3] It is important to ensure the best-caliber student is being accepted into the DC program through more rigorous entrance requirements and interviews.[2]

Lastly, due to the negative connotations attached to remediation, faculty need to improve communication with students to mitigate unnecessary stress and anxiety about the remediation process. This subtle shift of culture might have an impact in effecting student enthusiasm and engagement.

For future success it will be important to reevaluate institutional resource allocations and faculty/TA roles and development for CSEC to reach its full potential. There is also a need for additional chiropractic remediation studies that will help create a culture of remediation within the chiropractic educational community.

CONCLUSION

The CSEC at UWS has developed and implemented a chiropractic remediation program to satisfy the need for objectively identifying and remediating clinical skill deficiencies. The CSEC remediation program looks to standardize the process of planned remediation to allow continued academic and clinical success for UWS students. This remediation program has experienced an increase in use in its initial 3 years of operation, indicating more inclusion of the program across the DCP departments, clinics, and assessment. The outcome of remediation is still not clear. There are no consistent assessment measures in place to determine whether the remediation was a success. This remediation process is also highly focused on the short term (improving performance to pass an exam or assessment) and not a longer-term approach that is necessary in a competency-based curriculum.

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About the Authors

Suzanne Lady is an assistant professor in the department of clinical education at the University of Western States (2900 NE 132nd Avenue, Portland, OR 97230; sulady@uws.edu). Leslie Takaki is the research & development review board administrator in the department of research and sponsored programs at the University of Western States (2900 NE 132nd Avenue, Portland, OR 97230; ltakaki@uws.edu). Address correspondence to Suzanne Lady, 2900 NE 132nd Avenue, Portland, OR 97230; sulady@uws.edu.

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REFERENCES

1. Nursing and Midwifery Board of Australia. National competency standards for registered nurses. Melbourne: Nursing and Midwifery Board of Australia; 2014. http://www.nursingmidwiferyboard.gov.au/codes-guidelines-statements/codes-guidelines.aspx#competencystandards. Published August 2014. Accessed July 27, 2017.
2. Wyatt LH, Perle SM, Murphy DR, Hyde TE. The necessary future of chiropractic education: a North American perspective. *Chiropr Osteopat*. 2005;13:10.
3. Kalet A, Guerrasio J, Chou CL. Twelve tips for developing and maintaining a remediation program in medical education. *Med Teach*. 2016;38(8):787–792.
4. Makhani L, Bradley R, Wong J, Krynski E, Jarvis A, Szumacher E. A framework for successful remediation

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within allied health programs: strategies based on existing literature. *J Med Imaging Radiat Oncol*. 2012; 43(2):112–120.
5. Szumacher E, Catton P, Jones GA, et al. Helping learners in difficulty–the incidence and effectiveness of remedial programmes of the medical radiation sciences programme at University of Toronto and the Michener Institute for applied sciences, Toronto, Ontario, Canada. *Ann Acad Med Singapore*. 2007;36(9):725–734.
6. Hauer KE, Ciccone A, Henzel TR, et al. Remediation of the deficiencies of physicians across the continuum from medical school to practice: a thematic review of the literature. *Acad Med*. 2009;84(12):1822–1832.
7. Custer N. Remediation 101: challenge for nurse educators. *Teach Learn Nurs*. 2016;11:166–170.
8. Cleland J, Leggett H, Sandars J, Costa MJ, Patel R, Moffat M. The remediation challenge: theoretical and methodological insights from a systematic review. *Med Educ*. 2013;47(3):242–251.
9. Winston KA, Van Der Vleuten CP, Scherpbier AJ. Remediation of at-risk medical students: theory in action. *BMC Med Educ*. 2013;13:132.

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