



### A DIFFERENT INSTRUCTIONAL MODEL TO IMPROVE STUDENT LEARNING OUTCOMES IN GROSS AND APPLIED ANATOMY FOR PHYSICAL THERAPY STUDENTS

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#### PURPOSE

Teaching and learning anatomy in a DPT program poses a challenge to students and faculty because of the volume of material needed as foundational information for a PT curriculum. The aim of this study was to determine if a round robin model of instruction in anatomy and applied anatomy labs, is more effective to meet the course learning objectives compared to a more traditional, separate class instruction.

#### Guiding Questions

1. What were the faculty and students' perception of the teaching method used for anatomy and applied anatomy?
2. What were the faculty's perception of the students' understanding of the material presented?
3. Did the faculty and students perceive any barriers to their learning?
4. Did the faculty and students perceive any opportunities for their learning?

#### SUBJECTS

30 students participated in the study; 15 students were instructed using the round robin method, 15 using the more traditional setting. Five faculty participants instructed both groups of students.

#### METHODS

Two teaching methods were examined during the lab portion of the anatomy courses (cadaver, model, and applied) to determine which teaching method improved learning outcomes using qualitative methodology. The theoretical framework was grounded in the cognitive load theory based on the learning philosophy of cognitivism (Paas, Renkl, & Sweller, 2003; Schilling, 2016). Research questions focused on the perceptions of the PT students and faculty to explore their knowledge, learning experiences, and barriers to learning anatomy. The more traditional teaching model was used in three separate lab classes; cadaver, models, and applied anatomy over a 2 day period; a total of 8 hours of cadaver and model lab, then 7 hours of applied anatomy for a total of 15 hours. The round robin model was implemented by rotating the students between the 3 lab classes every 2 hours over 2 days, for a total of 15 hours. Data was collected using focus groups and open ended questionnaires completed by students and faculty. Interview and questionnaire data were analyzed using coding and themes. The data was then triangulated using statistical data analysis of gross and applied anatomy midterm and final exam results specific to the content taught during the data collection

#### RESULTS

The students and faculty who participated in the round robin method perceived the following:

- Increased focus
- Increased engagement
- An increase in the amount of content covered
- Increased time spent in lab
- Increased time for answering questions
- increased content retention

Exam scores of the students who participated in the round robin model exhibited an increase in exam scores compared to the more traditional classroom lab model.

In the table below GA Lab represents the exam scores from cadaver and models lab exams. AA represents the exam scores from the Applied Anatomy course.

		GA Lab	GA Written	AA written	AA Lab
Group 1 RR	Number	14	14	14	14
	Mean	79.64	80.14	22.93	96.21
	SD	9.39	7.01	2.2	2.99
	Median	80.75	82	24	97
	Minimum	58	68	19	91
	Maximum	93	93	25	100
Group 2	Number	14	14	14	14
	Mean	76.79	77.64	21.5	93.21
	SD	12.28	8.12	2.9	8.82
	Median	78.75	78	23	94.5
	Minimum	61	58	17	64
	Maximum	95.5	90	25	100
p value (t test)		0.5	0.39	0.15	0.25

#### DISCUSSION

The round robin method of instruction may benefit students' comprehension and retention of anatomy and applied anatomy, leading to a more effective and comprehensive foundational knowledge base for physical therapy students.



#### Clinical Relevance

Today's robust doctor of physical therapy programs require the students to possess a broader and more explicit knowledge of the foundational sciences, and educators are expected to be innovative in their delivery of the content to assist the success of each student (CAPTE, 2017). The round robin method is another teaching method to add to the educators tool belt to assist our students to reach their learning goals.

