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Learning Strategies Among High-Performing Students in a First-Year Scientific Foundations of Medicine Course: A Descriptive Study

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INTRODUCTION & AIM

- The Scientific Foundations of Medicine (SFM) course is the first foundational course in our medical curriculum and is heavily rooted in biochemistry and molecular mechanisms. As one of the earliest and most academically demanding courses in the 1st year, a significant proportion of students struggle with the volume and concept of the material.
- In contrast, a small subset of students consistently achieve top-tier performance.
- Understanding the learning strategies of these high-performing students may provide actionable insights to support future cohorts.
- This study aims to identify the self-reported study behaviors and learning strategies most used by top-performing students in the SFM course.

SFM: Course Goals

1. Recognize the connection between the structure and functions of biological macromolecules, cells, and tissues in the human body.
2. Appreciate the importance of homeostasis maintenance and discuss the major regulatory mechanisms in the body.
3. Apply knowledge of the models of inheritance to solve problems concerning genotype and allele frequencies.
4. Explain how histopathological, molecular, and biochemical techniques are used for diagnostics and treatment.
5. Discuss the principles of drug-body interactions.

SFM Course – Snapshot	
Total Credits	**3** credits
Content delivery	Lectures: **45** hrs.
	Labs: 2 lab hrs. (virtual)
Attendance Policy	Optional for lectures
Duration	Course spread over **3 blocks** (each block ~4 weeks long)

Assessments	• **Formative assessments (FA):** Available on Canvas©, administered to help with content practice
	  • **5%** of the total course grade
	• **Integrated quizzes (IQ):** Administered each week on Tuesday mornings, 2-3 quizzes per block
	  • **10%** of the total course grade
	• **Block exams:** Cumulative exam at the end of the block; 3 block exams for the course
	  • **85%** of the total course grade

SFM: Basic Science Distribution

Block	Week	Basic Science Discipline	Lecture Hrs.
Block 1	Week 1	Physiology Histology	4 1
	Week 2	Physiology Histology Biochemistry	1 1 2
	Week 3	Biochemistry	3
	Week 4	Biochemistry Physiology	1 2
Block 2	Week 1	Biochemistry	5
	Week 2	Biochemistry	1
	Week 3	Biochemistry Anatomy	1 1
Block 3	Week 1	Physiology Biochemistry Pharmacology	2 2 1
	Week 2	Biochemistry Pathology Lab (virtual)	5 2
	Week 3	Biochemistry Pathology	4 3
	Week 4	Pathology Pharmacology	1 4

SFM: Basic Science Discipline Distribution		
Discipline	**Contact hrs.**	**% of all Contact hrs.**
Biochemistry	24/47	51.1 %
Physiology	9/47	19.1 %
Pathology	6/47	12.8 %
Pharmacology	5/47	10.6 %
Histology	2/47	4.2 %
Anatomy	1/47	2.1 %

METHOD

- We designed a cross-sectional descriptive study targeting the top-performing students (>90% grade in the course; around 15 students) in the SFM course.
- Participants will complete an 18-item Likert-scale survey examining:
  - Study structure
  - Use of active learning strategies
  - Resource utilization
  - Lecture engagement
  - Peer collaboration
  - Test-taking approaches
  - Self-attribution of success
- Items were selected to focus on modifiable study behaviors rather than fixed characteristics.
- Planned analyses will include descriptive statistics summarizing response distributions (means, frequencies, and percentages) for each survey item to identify commonly endorsed learning behaviors among high-performing students.

RESULTS & DISCUSSION

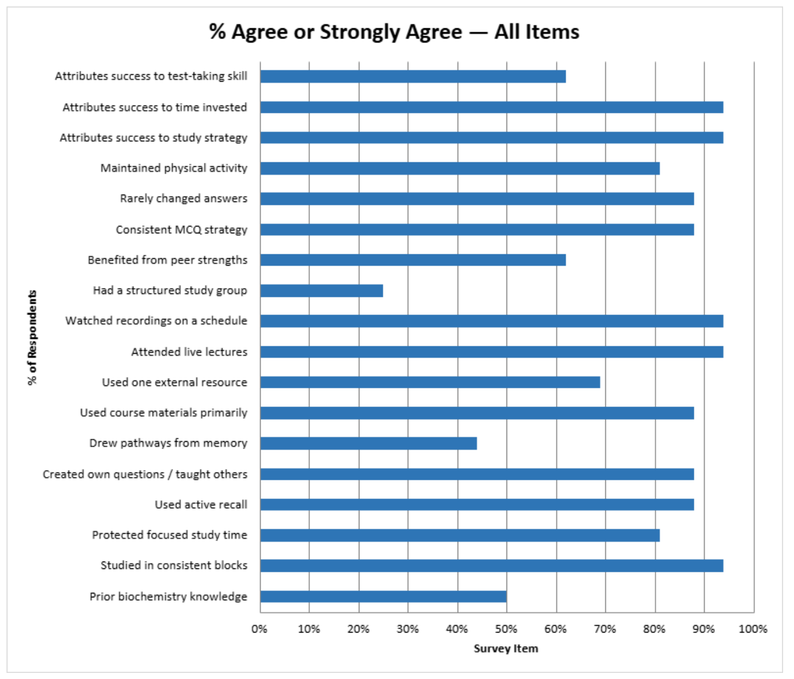
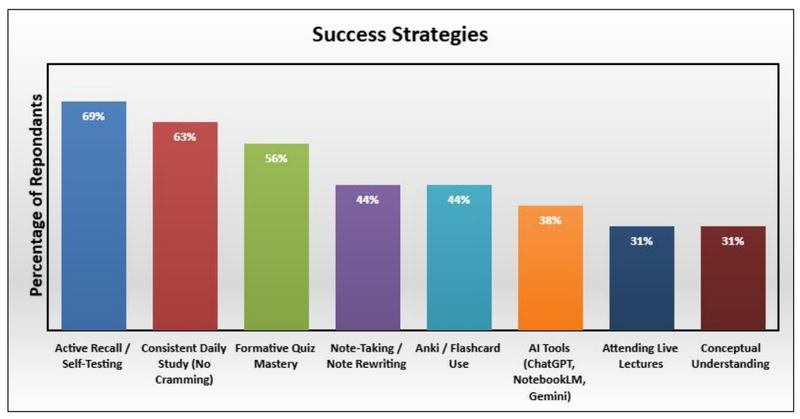


Figure 1: Compiled results from the survey administered to the students

A



B

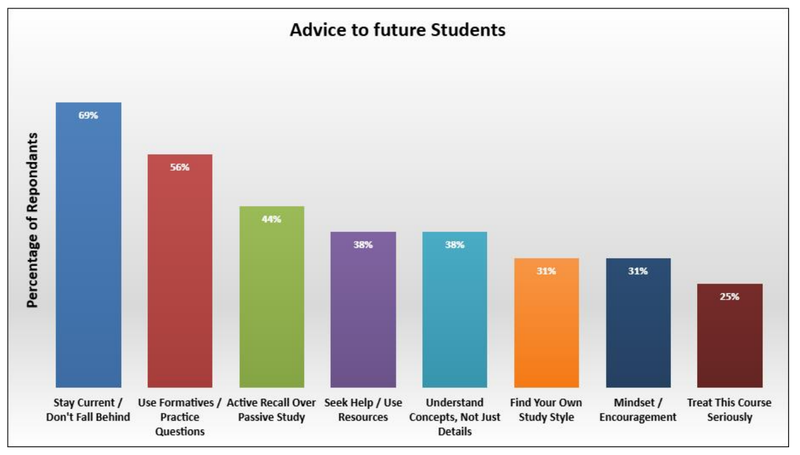


Figure 2: A and **B** shows results from the open-ended questions in the survey

CONCLUSION

- Identifying the self-reported strategies of top-performing students may inform targeted academic support interventions and early guidance for incoming medical students in this rigorous foundational science course.
- Findings should be interpreted in light of the study's limitations, including the small sample size and the focus on a select group of high-performing students from a single course, which may limit generalizability.