



2021 PROGRAM UPDATE

**PHYSICIAN ASSISTANT
COLLEGE ADMISSIONS TEST (PA-CAT)**

**PHYSICIAN ASSISTANT PRE-MATRICULATION
SUCCESS PROGRAM**

**PA-CAT
RESULTS
HELP PA
EDUCATORS
GAIN BETTER
INSIGHT
INTO THE
ACADEMIC
PREPAREDNESS
OF THEIR
APPLICANTS
IN 9 KEY
PREREQUISITE
SUBJECTS.**

WHAT'S INSIDE

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The PA Admissions Challenge: Accurately Selecting the Best-Qualified Candidates

With a need to evaluate hundreds of applicants from a variety of educational experiences and backgrounds, PA programs struggle making objective, informed decisions about which applicants are most likely to succeed in their program.

WHY A PA ADMISSIONS EXAM?

The PA curriculum is demanding. Only academically strong students are likely to graduate and pass the PANCE. PA programs rely on admissions indicators such as prior course work, prior GPA, science GPA, and in some cases GRE scores to help identify the academically stronger candidates. Each of these indicators has limitations when comparing applicants from a variety of backgrounds and educational and work experiences.

MEETING THE CHALLENGE

After extensive research and conversations with PA educators, we learned that many PA programs felt they would benefit from use of an admissions exam targeted to the PA profession. To meet this need, Exam Master developed the Physician Assistant College Admissions Test (PA-CAT). The PA-CAT is designed to measure applicant knowledge in prerequisite subjects most commonly required for admission to PA school, particularly topics that are foundational to succeeding in the critical first year.

The PA-CAT provides educators with an objective measure of applicant academic readiness. This data can be used to support a holistic admissions process by providing an important data point about the overall suitability of a candidate for admission to PA

**“I THOUGHT THAT THE TEST ACCURATELY
DEPICTED THE BACKGROUND KNOWLEDGE
AN APPLICANT SHOULD KNOW FOR PA SCHOOL.”**

- COLLIN T.

school. The PA-CAT outcomes data can help to differentiate between similarly qualified candidates. PA-CAT outcomes data can also help support admissions goals related to diversity by providing better insight into what academic support candidates might need upon entry into PA school.

FROM FIELD TESTING TO ACTUAL USE – THE EVOLUTION OF THE PA-CAT

Led by Johnna Yealy, PhD, PA-C and Scott Massey, PhD, PA-C, the PA-CAT developmental project took place in 2018 and 2019 and involved more than 2000 newly enrolled PA students from over two dozen PA programs. Data collection and analysis continues on these initial cohorts. In May of 2020, the PA-CAT was publicly released to all PA programs and candidates for the 2020 admissions cycle. From research to launch, broad PA program participation has been critical in helping to ensure the PA-CAT was developed to meet the needs of all stakeholders.



Cover the most important prerequisite subjects

Prerequisite subjects required for admission vary among PA programs, but a core set of subjects is common to most. The nine subjects covered on the PA-CAT have been selected because of their relevance to student success during the demanding didactic portion of their education.



Focus on learning objectives relevant to PA school

The PA-CAT covers the important prerequisite subjects and the topics and concepts within those subjects considered most relevant to PA school. Over time, adjustments to the PA-CAT from this focused approach will help improve its predictive value.

Four Keys to Building a High-Quality Admissions Exam



Conduct extensive field testing

Over 25 PA programs participated in the research phase of the PA-CAT admissions exam project. Cohorts of new PA students helped to stress test research versions of the PA-CAT—more than 2000 examinees! This extensive field-testing helped us identify under-performing test items, focus the content, and develop a scaled scoring model for launch of the new PA-CAT.



Seek community involvement

The PA-CAT project has been the vision of Exam Master and the project's two principal investigators: Johnna Yealy, Ph.D., PA-C and Scott Massey, Ph.D., PA-C. The support from our PA advisory committee, researchers, item writers and reviewers, and the many involved PA program directors and faculty has also been invaluable.

This truly community-based project has been supported by the collective thoughts, ideas, and experience of many who serve and work in the PA educational community.

Development of the PA-CAT: Focus on What Applicants Should Know

The PA-CAT was developed after careful research into identifying which pre-requisite subjects are most commonly required for admission into PA school. Topics were chosen based on literature reviews, surveys, and consultations with PA educators.

PA educators were asked to identify which prerequisite subjects, topics, and concepts are most important for mastery of the demanding PA curriculum, particularly the didactic phase. Anatomy and physiology are given the most emphasis on the PA-CAT in recognition of the importance these subjects hold in the early curriculum.

While early research versions of the PA-CAT were composed of 180 multiple choice items covering 12 subject areas, the final exam was refined through extensive field-testing to cover nine subjects using 240 test items. For statistical accuracy, the most heavily weighted subjects are grouped into scoring domains for meaningful candidate comparisons.

The content of future versions of the PA-CAT will be guided by outcomes data and a review of which concepts are most useful to measure in a PA admissions examination.

TESTING HIGHER COGNITIVE DOMAINS

The PA-CAT was developed to be a higher-level assessment that goes beyond simply testing candidate subject knowledge. Exam items were constructed along a continuum of cognitive domains, including comprehension, application and analysis. This helps to better differentiate between academically stronger and weaker candidates.

PA-CAT Weighting by Cognitive Level	
COGNITIVE LEVEL	PERCENTAGE OF TEST
Knowledge	10
Comprehension	21
Application	63
Analysis	7
Synthesis	<1
Evaluation	0

THE EXAM MASTER STUDY MATERIALS PREPARED ME WELL FOR THE EXAM. I FEEL THAT THE PA-CAT IS A BETTER REPRESENTATION OF MY PREPAREDNESS AND INTELLECT FOR PA SCHOOL RATHER THAN THE GRE.” - EMILY N.

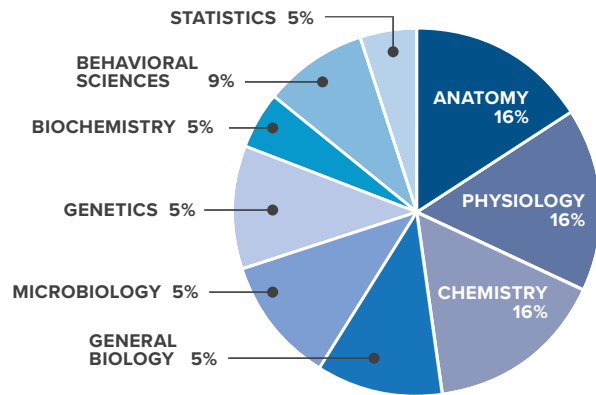


PA-CAT Content Structure and Weighting

PA-CAT test items are developed by subject experts to measure key learning objectives based on common, college-level syllabi for each prerequisite subject. Items are chosen for inclusion in the PA-CAT based on what basic- to intermediate-level learners are expected to know in that subject. Additional item selection criteria focus on those topics and concepts deemed most important to success in the PA curriculum.

Each subject covered on the PA-CAT is organized along a hierarchical domain from general to specific. This multi-level approach allows for very granular scoring feedback, particularly for the most heavily weighted subjects.

PA-CAT SUBJECT WEIGHTING



SAMPLE PA-CAT SUBJECT HIERARCHY

Subject Area	Topics Covered
Anatomy The Back	<ul style="list-style-type: none"> • Curvatures and Associated Pathologies of the Vertebral Column • The Vertebrae • Joints of the vertebral Column • The Extrinsic Back Muscles • The Intrinsic Back Muscles • Spinal Cord and Spinal Nerves
The Upper Limb	<ul style="list-style-type: none"> • The Pectoral • The Axilla • The Shoulder • The Brachial Plexus • The Arm • The Forearm • The Wrist and Hand
Physiology The Cell	<ul style="list-style-type: none"> • Functions of the Cellular Organelles • Central Dogma of Molecular Biology - Translation and Transcription • Macromolecules of the Cell
Membrane Anatomy and Physiology	<ul style="list-style-type: none"> • Diffusion and Osmosis • Membrane Transport • Basics of Membrane Potential • The Action Potential • The Muscular Contraction • Membrane Structure

Note: Due to limitations on exam length not all sub-categories are covered on each version of the exam.

PA-CAT Test Blueprint by Subject Area

SUBJECT AREA	PERCENTAGE OF TEST	TOPICS COVERED
Anatomy	16	The Abdomen; The Back; The Head; The Lower Limb; The Neck; The Pelvis and Perineum; The Thorax; The Upper Limb
Physiology	16	Blood and Clotting; Circulation; Endocrinology; Gastrointestinal Physiology; Membrane Physiology; Metabolism; Nervous System; Renal Physiology; Reproduction; Respiratory Physiology; The Cell; The Heart; The Special Senses
General Biology	11	Bioenergetics; Biotechnology; Cell Structure and Function; Cellular Reproduction; Cellular Respiration; Cellular Transport; Chemical Building Blocks; Chemical Composition of Cells; DNA; Gene Expression; Genetics; RNA; Signal Transduction; Viruses
Microbiology	11	Bacteria; Viruses; Fungi; Parasites; Environmental Microbiology; Interaction between Microbe and Host; Microorganisms and Human Disease
Genetics	11	Molecular Structure and Replication of Genetic Material; Patterns of Inheritance; Genetic Analysis of Individuals and Populations; Molecular Properties of Genes; Genetic Technologies
Chemistry	16	General Chemistry: Acids and Bases; Atoms, Ions, and Molecules; Basic Concepts; Chemical Bonding and Molecular Geometry; Chemical Reactions; Electrochemistry; Gases; Liquids, Solids, and Solutions; Stoichiometry; Thermochemistry and Energy Organic Chemistry: Acids and Bases; Alkanes; Bond Properties; Chemical Bonding and Structure; Cycloalkanes; Hybridization/LCAO; Molecular Orbital Theory; Resonance; Stereochemistry
Biochemistry	5	Carbohydrates; Enzymes; Fat Soluble Vitamins; Integration of Metabolism; Lipids; Nucleic Acids; Protein; Specialized Metabolism of Tissues; Specific functions of proteins - disorders of metabolism
Behavioral Sciences	9	Psychology: Biological Bases of Behavior; History and Approaches; Lifespan Development; Memory; Motivation and Emotion; Psychological Disorders; Sensation and Perception; Social Psychology; States of Consciousness Sociology: Culture; Deviance and Conformity; Research Methods; Social Change; Social Inequalities; Social Institutions; Sociological Perspective
Statistics	5	Anticipating Patterns; Exploring Data; Sampling Experimentation; Statistical Inference

PA-CAT Outcomes Reporting Objective Measures of Candidate Performance

The PA-CAT exam is a norm-referenced exam designed to measure candidate knowledge and comprehension in key subjects and to report candidate rankings among their peers. PA-CAT scores are reported on a scaled basis to minimize measurement errors and to maximize reporting accuracy of results across different versions of the exam. A scaled score better differentiates between academically weaker and stronger examinees based on item difficulty and other factors.

“I REALLY ENJOYED THE PA-CAT. I FEEL IT IS A BETTER WAY TO MEASURE A PRE-PA STUDENTS PRIOR EDUCATION AND IS A GOOD SCALE ON PA PREPARATION.” - LOGAN H.

Both candidates and participating programs receive detailed scoring and candidate ranking feedback so that both candidates and admissions staff can compare individual candidate results with an entire cohort of PA-CAT examinees. Exam Master provides both candidates and PA educators with access to special scoring portals where a detailed scoring analysis is provided. Candidate score reports, program transcripts and a regularly updated norm table ensure that all stakeholders have access to accurate and reliable PA-CAT outcomes data.

Composite Quintile Ranking		
SCALED SCORE	QUINTILE RANK	DESCRIPTION
542 and above	1	Top 20%
525-541	2	
512-524	3	
495-511	4	
494 and below	5	Bottom 20%

Anatomy & Physiology Quintile Ranking		
SCALED SCORE	QUINTILE RANK	DESCRIPTION
546 and above	1	Top 20%
525-545	2	
505-524	3	
486-504	4	
485 and below	5	Bottom 20%

Chemistry Quintile Ranking		
SCALED SCORE	QUINTILE RANK	DESCRIPTION
547 and above	1	Top 20%
526-546	2	
511-525	3	
487-510	4	
486 and below	5	Bottom 20%

Biology Quintile Ranking		
SCALED SCORE	QUINTILE RANK	DESCRIPTION
551 and above	1	Top 20%
531-550	2	
516-530	3	
497-515	4	
496 and below	5	Bottom 20%

STUDENT TRANSCRIPT

Candidate Name: Fname Lname

CURRENT TEST DATE	SCORE	ANATOMY AND PHYSIOLOGY	BIOLOGY*	CHEMISTRY**	COMPOSITE***
August 15, 2020	SS	414	402	410	412
	PR	53	55	55	62
PREVIOUS TEST DATES	SCORE	ANATOMY AND PHYSIOLOGY	BIOLOGY*	CHEMISTRY**	COMPOSITE***
May 8, 2020	SS	402	406	402	408
	PR	46	54	44	52
January 25, 2020	SS	399	410	404	412
	PR	53	57	47	62
October 4, 2019	SS	400	403	400	406
	PR	44	54	42	48

The PA-CAT is designed to be an important objective tool to help PA programs better assess the academic preparedness of their applicants. For programs committed to a holistic admissions process, PA-CAT results can help identify early the academic strengths and weaknesses of candidates programs may wish to admit.

Scaled Scores (SS) range from 200 to 800 and are the total number of items answered correctly converted into a standardized scale to account for test form difficulty, allowing for more accurate and reliable comparisons.

Percentile Ranks (PR) indicate the percentage of test takers who earned a scaled score lower than a given score. The percentile ranks are updated to reflect all candidate results through the end of the month of the most recent exam.

“THE PA-CAT WAS A GREAT TEST FOR ENTRANCE INTO PA SCHOOL AS IT WAS MORE GEARED TOWARD THE MATERIAL AND COURSE LOAD THAT WE ARE LEARNING IN PA SCHOOL CURRENTLY.” - JANA K.

The Development Cycle of the PA-CAT Program: Research to Validation

Now in its second year of live use, the PA-CAT has been chosen by many PA programs either as a “mandatory” or “recommended” requirement for application to their schools. The PA-CAT is designed to help predict student performance in a way that is more reliable and more objective than some other admissions criteria.

Over 2,000 PA school candidates throughout the U.S. have registered for the PA-CAT. Feedback from a September 2021 survey of these individuals (scattered throughout this brochure) showed strong support for the program among the candidates. Data from current candidates as well as from PA students who took research versions of the PA-CAT will provide rich opportunities for research and analysis.

During the research phase, the PA-CAT showed both a good overall reliability index as well as positive statistical correlation with science GPA and ePackat scores. Data on current examinees is being compiled and research is presently under way to examine how the PA-CAT correlates with student performance indicators throughout PA school.

PA-CAT Summary	
Number of Examinees*	962
Number of test items	240
Overall Exam Reliability	0.91

* As of May 31, 2021

Performance of PA-CAT Examinees		
SUBJECT AREA	NUMBER OF ITEMS	MEAN PERCENT OF ITEMS CORRECT
Anatomy & Physiology	78	53.8
Biology	78	54.5
Chemistry	50	56.2
All Subjects	240	56.3

* As of Sept. 20, 2021

“I TOOK THE PA-CAT SO THAT I COULD APPLY TO SOME PA SCHOOLS THAT REQUIRED THIS EXAM. THE RESOURCES WERE INCREDIBLY HELPFUL IN THAT THEY HELPED TO KNOW WHAT TO STUDY IN PREPARATION. I THOUGHT THE EXAM WAS CHALLENGING BUT FAIR.”

- MORGAN O.

READ MORE CANDIDATE TESTIMONIALS AT [PA-CAT.COM/TESTIMONIALS](https://pa-cat.com/testimonials)



Past, Present, Future PA-CAT Research Activities

Below is a listing of research and scholarship associated with the PA-CAT. PA educators, advisors and admissions teams are invited to get involved in a variety of research opportunities working collaboratively with other PA programs and with PA-CAT lead researchers, Scott Massey, PhD PA-C, and Johnna Yealy, PhD PA-C.

Thanks to the participation of a broad segment of PA programs operating under a variety of admission and enrollment cycles, Exam Master was able to accelerate the PA-CAT development cycle. During the research phase of the program, over 2,000 newly enrolled PA students participated in field testing research versions of the PA-CAT. By September of 2021, over 2,000 PA school applicants have registered to take the public version of the PA-CAT.

Available on the PA-CAT website, pa-cat.com/research-abstracts/, is a complete synopsis of the research comparing the correlation of PA-CAT and admissions and programmatic variables that has been completed as of October 2021.

- Part 1: *Undergraduate Performance Measured by Science GPA & Cumulative GPA* in March 2020
- Part 2: *Clinical GPA and PANCE* completed in July 2021. Presented at PAEA in October 2021
- Part 3: *Didactic Year GPA and PACKRAT* presented at PAEA in October 2020
- Part 4: *Physician Assistant School Anatomy and Medical Science Course Grades* presented at PAEA in October 2019

FUTURE RESEARCH:

The next stage of the PA-CAT research agenda is to further validate the reliability of the PA-CAT through a multiprogram research. The University of Tampa IRB has approved a new study to longitudinally research the efficacy of the PA-CAT as an admissions instrument entitled: [Reliability and Validity of the Physician Assistant College Admissions Exam Scores for Predicting Performance on the Physician Assistant National Certification Examination: A Multi-Program Study](#), will be launched beginning in fall 2021. This research will be ongoing over the next two years. Periodic updates from any ongoing research will be posted on the research page of the PA-CAT website.

For complete research synopsis', visit: pa-cat.com/research-abstracts/



**HELPING
PA PROGRAMS
AND THEIR
STUDENTS
SUCCEED**

Exam Master's Pre-Matriculation Program for New PA Students

Student success starts before classes begin!

For those PA programs using the PA-CAT, Exam Master's Pre-Matriculation program provides confidence that otherwise highly qualified candidates who may have some knowledge gaps, can still be admitted and succeed.

From working with PA programs since 2006, we know that the PA didactic curriculum is demanding and intense. New students need to grasp complex concepts quickly if they are going to avoid falling behind and be prepared for the clinical phase of their training. Anatomy and physiology are particular challenge areas for new students. Non-traditional students, those who may have finished formal schooling some years ago, may be particularly at risk of struggling during the first semester of PA school.

To help PA programs better support their new students, including those who may have disadvantaged or non-traditional backgrounds or educational experiences, Exam Master offers a basic science refresher program for new students. With a strong emphasis on anatomy and physiology, the Pre-Matriculation program is designed to cover the subjects and topics most important for students to know at the start of their first semester in PA school.

Central to the program is a strong emphasis on both formative and summative assessments. Embedded quizzes provide users with immediate feedback on the course material. Subject exams provide detailed feedback on knowledge of core topics within each subject. The capstone exam measures overall learning and builds confidence.

A pre-matriculation program has three essential components, designed to provide new students with a tune-up or refresher in the core prerequisite subjects they need to know:

- Initial Baseline Assessment
- Targeted Course Modules with Summative Exams
- Capstone Exam

REFRESHING STUDENTS ON PREREQUISITE KNOWLEDGE GAPS IS MORE EFFICIENT AND EFFECTIVE THAN WAITING UNTIL NEEDED REMEDIATION IS IDENTIFIED AFTER CLASSES BEGIN.

PRE-MATRICULATION CURRICULUM INCLUDING FORMATIVE AND SUMMATIVE ASSESSMENTS

Course Overview			
SUBJECT	LEARNING OUTCOMES COVERED	VIDEO INSTRUCTION TIME (IN HOURS)	PRACTICE QUESTIONS
Time Management	N/A	1.00	N/A
Anatomy	59	8.50	242
Physiology	26	3.25	113
Microbiology	36	9.50	190
Biochemistry	47	7.25	211
Critical Thinking	N/A	1.00	N/A
TOTALS	168	30.50	756

Approximate Course Time (Hours)				
SUBJECT	VIDEOS AND PRACTICE QUESTIONS	SUMMATIVE COURSE EXAMS	CAPSTONE EXAM	TOTAL TIME
Time Management	1.0	N/A	N/A	1.00
Anatomy	12.50	2.25	1.00	15.75
Physiology	5.25	1.00	0.75	7.00
Microbiology	12.75	1.75	0.50	15.00
Biochemistry	10.75	1.50	0.50	12.75
Critical Thinking	1.0	N/A	N/A	1.0
TOTALS	33.50	6.50	2.75	52.50

Capstone Exam	
SUBJECT	NUMBER OF QUESTIONS
Anatomy	60
Physiology	40
Microbiology	20
Biochemistry	30
TOTALS	150

Summative Course Exams	
SUBJECT	NUMBER OF QUESTIONS
Anatomy	136
Physiology	53
Microbiology	105
Biochemistry	94
TOTALS	388

While total course and exam time will vary by student, time estimates provide realistic example of time commitment to complete all subjects in the program.

PA Programs Getting Acquainted with the PA-CAT: Examples of Admissions Usage and Implementation

Many PA programs have adopted outcomes reporting from the PA-CAT exam as part of their holistic admissions process. PA-CAT outcomes data is used to help identify those candidates who may be most academically prepared for PA school. For the 2021-22 cycle, PA programs are generally choosing to “recommend” rather than “require” that their candidates take the PA-CAT exam. This approach allows for a transitional period for the program and for applicants.

The following are examples of how PA-CAT data is being used by admissions teams:

- PA-CAT scores are weighted and then incorporated into admissions rubrics to contribute to an overall profile of a candidate’s suitability for admission.
- Programs are using PA-CAT scores to identify candidates who may have weaker academic backgrounds but can demonstrate through the PA-CAT that they have the basic science foundation to succeed in PA school.
- PA Programs retrospectively review PA-CAT data for newly admitted students to back test the reliability of their admissions process with a goal toward improving the accuracy of their selection process going forward.

Because the PA-CAT serves as an important diagnostic tool for admitted applicants, Exam Master offers a companion Pre-Matriculation companion course to help these students plug any knowledge gaps identified on the PA-CAT. PA programs then have greater confidence that potentially at-risk students can be supported early.

Examples of how PA programs are implementing Exam Master’s Pre-Matriculation program:

- PA programs may encourage or require incoming students to complete the course prior to matriculation as preparation for their first semester.
- PA Programs may require pro-visionally accepted students with learning gaps to complete the Pre-Matriculation course prior to enrollment.
- Some PA Programs create a credit course consisting of the Pre-Matriculation program and for which all students must enroll and complete to get a passing grade.
- Because new students have access to the course for up to 18 months, some PA Programs are exploring how the Pre-Matriculation subject modules can be a companion to students’ didactic studies or for remediation.

“I TOOK THE PA-CAT BECAUSE MY TOP SCHOOL, CENTRAL MICHIGAN UNIVERSITY, REQUIRED IT. I ENDED UP LOVING THE TEST MORE SO THAN THE GRE.” - NORMAN C.

Helping PA Programs Solve Admissions Challenges

While use of a science-based exam such as the PA-CAT can be an important component of an effective admissions program, we recognize PA educators are dealing with many pieces of the puzzle in choosing the right candidates. The extensive conversations we had with PA educators during the research phase of the PA-CAT project showed us that PA school admissions teams grapple with a number of issues and challenges in selecting the best candidates for their program. We are here to help.

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Exam Master is now supporting PA educators tasked with finding their next cohort of future PAs in the following ways:

ADMISSIONS WORKSHOPS

Featuring PA educators with years of admissions experience, Exam Master conducts regular virtual admissions workshops that cover important topics of interest to those tasked with recruiting and onboarding new students.

For more information on these free workshops please contact: Claudia Biester, cbiester@exammaster.com

PA-CAT IMPLEMENTATION AND TRAINING

Adopting a new science-based exam as part of a holistic admissions process requires some thought. Exam Master works with PA educators to help them use PA-CAT outcomes data in a variety of ways.

For information on PA-CAT implementation support please contact: Judy Cox, jcox@exammaster.com

ADMISSIONS DEPARTMENT EVALUATION AND IMPLEMENTATION SUPPORT

Exam Master can support PA programs in need of admissions support through the evaluation of their admission’s department practices and procedures including implementation services. Exam Master works one-on-one with program directors and their admissions director, helping them strengthen their admission department’s outcomes while adhering to their program’s mission and vision.

For information please contact:

Claudia Biester, cbiester@exammaster.com

CANDIDATE RISK ASSESSMENT SCALE

Now in field testing, Exam Master has developed a candidate risk assessment scale whose objective is to help differentiate candidates who are likely to succeed in PA school from those who may not. Opportunities exist for PA programs to back test the scale and help improve its validity.

For more information please contact:

Jim Pearson, jpearson@exammaster.com

SUPPORTING PA STUDENTS, EDUCATORS, AND PRACTITIONERS IS WHAT WE DO!



Helping PA programs and their
students succeed with our

**Physician Assistant College
Admissions Test (PA-CAT)**

and

**Physician Assistant Pre-Matriculation
Success Program**

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PLEASE VISIT OUR WEBSITES:**

General products and services:
www.exammaster.org

PA-CAT candidate and program information:
www.pa-cat.com