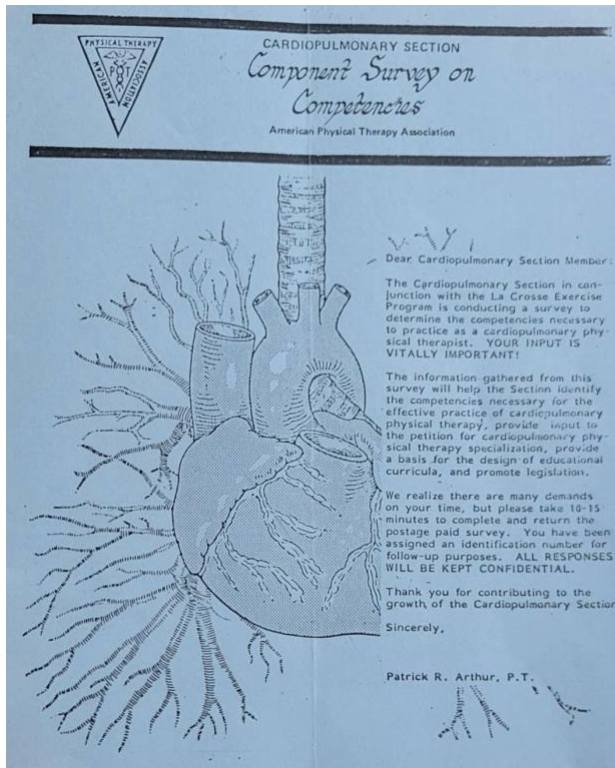


Cardiovascular and Pulmonary (CVP) Competencies: A Chronology

As we reflect upon the past 50 years of the CVP Academy, we take the opportunity to honor those who were leaders, mentors, and pioneers in our clinical specialty and the APTA with a focus on competencies. Let us reflect on our clinical specialty's history, and remind ourselves of the many who have contributed, followed, and set the bar for all who will lead us in the future.

In 1973 the APTA wrote a position paper on competency testing in PT. This was further developed in 1977 when the APTA published "Competency in PT: Analysis of Practice," also known to many as the "RedBook." Competencies in CVP practice were included in this publication, however, the RedBook was published before the CVP Section existed. Meryl Cohen was invited to review these RedBook competencies at an APTA workshop. The CVP competencies in the RedBook served as a basis for subsequent CVP competency publications.

In 1980, Patrick Arthur, who was in the exercise physiology department at the University of Wisconsin-La Crosse at the time, asked Linda Crane, who was a leader in the CVP PT section, to be on his dissertation committee. Together, Patrick and Linda collaborated over the next 2 years to create the original survey on CVP competencies. Of note, it was important to distinguish between a "description of practice" and "competency." It was also important to delineate between what constituted entry-level and advanced-level competencies in CVP physical therapy. The survey was administered in 1981 to members of the CVP PT section who were asked to identify competencies that were very, or extremely essential to cardiopulmonary PT practice and were in fact being performed very, or extremely frequently. In the narrative below, we have attempted to document the journey towards competency in CVP practice for entry-level practitioners and advanced practitioners.



HOW FREQUENTLY DO YOU USE THIS COMPONENT?	COMPONENT	HOW ESSENTIAL TO CARDIOPULMONARY PRACTICE?	HOW FREQUENT DO YOU TREAT PATIENTS WITH THIS DISORDER?	DISORDER	HOW ESSENTIAL IS KNOWLEDGE OF THIS DISORDER TO CARDIOPULMONARY PRACTICE?
NEVER OCCASIONAL FREQUENT VERY FREQUENT EXTREMELY FREQUENT		SOMEWHAT NOT ESSENTIAL VERY ESSENTIAL EXTREMELY ESSENTIAL	NEVER OCCASIONAL FREQUENT VERY FREQUENT EXTREMELY FREQUENT		SOMEWHAT NOT ESSENTIAL VERY ESSENTIAL EXTREMELY ESSENTIAL
1 2 3 4 5	Physical Therapy Short & Long Term Goals	1 2 3 4 5	1 2 3 4 5	Cardiomyopathy	1 2 3 4 5
1 2 3 4 5	Related Treatment Programs	1 2 3 4 5	1 2 3 4 5	Cardiopulmonary Arrest and Resuscitation	1 2 3 4 5
1 2 3 4 5	Discharge Planning	1 2 3 4 5	1 2 3 4 5	Cor Pulmonale	1 2 3 4 5
1 2 3 4 5	OTHERS, PLEASE LIST:	1 2 3 4 5	1 2 3 4 5	Congenital Heart Disease	1 2 3 4 5
1 2 3 4 5		1 2 3 4 5	1 2 3 4 5	Congestive Heart Failure	1 2 3 4 5
			1 2 3 4 5	Coronary By-Pass Surgery	1 2 3 4 5
			1 2 3 4 5	Coronary-Valve Replacement	1 2 3 4 5
			1 2 3 4 5	Disorders of the Central Nervous System	1 2 3 4 5
			1 2 3 4 5	Hypertensive Heart Disease	1 2 3 4 5
			1 2 3 4 5	Immunologic Diseases of the Lungs	1 2 3 4 5
			1 2 3 4 5	Infective Heart Disease (e.g. Endocarditis, Pericarditis, etc.)	1 2 3 4 5
			1 2 3 4 5	Inhalational Lung Diseases	1 2 3 4 5
			1 2 3 4 5	Ischemic Heart Disease	1 2 3 4 5
			1 2 3 4 5	Obstructive Pulmonary Disease (e.g. Asthma, Bronchitis, Bronchiectasis, Tumors, Foreign Bodies, Emphysema, etc.)	1 2 3 4 5
			1 2 3 4 5	Peripheral Vascular Disease	1 2 3 4 5
			1 2 3 4 5	Pulmonary Aspiration	1 2 3 4 5
			1 2 3 4 5	Pulmonary Atelectasis	1 2 3 4 5
			1 2 3 4 5	Respiratory Disease Syndrome (e.g. Infant RDS, Adult RDS, Respiratory Failure, Oxygen Toxicity, etc.)	1 2 3 4 5
			1 2 3 4 5	Restrictive Pulmonary Disease (Pulmonary Fibrosis, Restrictive Pneumonias, Pleural Peel, Chest Wall Deformity, Pleural Effusion, Disease of Diaphragm & Pleura, Kyphoscoliosis, Sarcoidosis)	1 2 3 4 5
			1 2 3 4 5	Rheumatic Heart Disease	1 2 3 4 5
			1 2 3 4 5	Trauma & Surgery of the Chest	1 2 3 4 5

THANK YOU!
PLEASE FOLD & STAPLE CLOSED BEFORE MAILING.

Patrick Arthur's original survey for CVP competencies.

ENTRY-LEVEL COMPETENCIES

In 1982, Shirley Sahrman, PhD, PT and Marilyn Gossman, PhD, PT from Washington University in St. Louis, coordinated a workshop with all PT programs across the United States to establish uniform entry level education for PT. Linda

Crane and Sharon Donovan represented the CVP PT Section and presented the results of Patrick Arthur's survey at this meeting. [See Workshop: Content for entry level PT education program; Cardiopulmonary Section Quarterly 1983](#)

Subsequently, the CVP Section created a task force to edit and approve this original description of practice to be considered as CVP entry-level competencies. Members of this task force included Nora Donohue, Sue Ellen Story, Catherine Certo, George Coggeshall, Meryl Cohen, Nancy Humberstone, Maria Pearl, and Sharon Donovan. This resulted in the first publication of CVP entry-level competencies in 1984 allowing the CVP Specialty Council to proceed with developing advanced competencies. This was required by the APTA Board of Directors for the CVP Specialty Council to develop and administer the CVP board certification examination.

Another decade passed, and in 1993, Linda Crane and students at the University of Miami validated and prioritized the established entry level competencies by sending a questionnaire to 97 generalist PTs and 74 cardiopulmonary PTs about the frequency of the skill, importance of the skill, and if the competency was entry or advanced level. Linda's goal was to generate a guide for PT educational program curricula. She also proposed that future revisions of the Entry-Level Cardiopulmonary Competencies be consistent with The Guide to PT Practice. The results were presented at the World Conference of Physical Therapy in 1994 and were published in 1995 after 500 surveys (250 APTA members and 250 cardiopulmonary section members) were mailed rating frequency of performance and essentialness of skills with a 34.2% usable survey return rate. In 1996, Linda Crane published ["Cardiopulmonary Entry Level Competency: Then, Now, and the Future," in CPTJ](#). The first edition of The Guide to Physical Therapist Practice was published in 1997 and included management of the patient, examination and evaluation, diagnosis, prognosis, intervention, and outcome that were likely to be used for patients with cardiovascular and pulmonary conditions.

In 2004, the APTA published "A Normative Model for Physical Therapist Professional Education" about entry-level curriculum which identified practice behaviors that were considered essential for PT graduates. Another document, "Minimum Required Skills of Physical Therapist Graduates at Entry-Level" was also prepared by the APTA in 2005 to further guide academic curriculum. Subsequently, Pam Bartlo, Meryl Cohen, and Gary Brooks generated a survey of CVP examination and intervention competencies consistent with The Guide to PT Practice. The survey was sent to APTA and CVP membership with the intent of updating CVP competencies (examination sent in 2005, intervention sent in 2008 to reduce respondent burden). CVP Examinations were comprised of 156 practice behaviors in 6 domains including: diagnostic studies and lab data, therapeutic regimes, pathology, individual patient characteristics, tests and measure, and factors that influence complexity. Random samples totaling 2,300 PTs were drawn from the general APTA membership, yielding a usable return of only 192 responses. The intervention survey in 2008 included 105 practice behaviors within 8 domains including: patient/client related instruction, therapeutic exercise, ADLs/IADLs and functional training, manual therapy, prescription/application of devices/equipment,

airway clearance methods, and program development related to public policy. The intervention survey was also administered to a random sample of 8,000 APTA members yielding 354 usable responses. These results were extensive and posted on the CVP section's website by 2010.

CV&P Examination Data (N = 167) *Sorted in each category by entry-level status*

Examination Skill	Percent Indicating at Entry-level	Percent Indicating Beyond Entry-level	Percent Indicating Not Important	Percent Missing
Diagnostic Studies and Lab Data				
Blood Glucose Levels	59.3	34.1	1.8	4.8
Complete Blood Count	54.5	35.3	5.4	4.8
Arterial Blood Gas	47.9	41.9	4.2	6.0
Graded Exercise Tests	44.9	46.7	3.6	4.8
Hemoglobin A1c	42.5	42.5	9.0	6.0
Pulmonary function lab data	39.5	50.9	4.8	4.8
Cardiac Enzymes	35.9	53.9	4.2	6.0
Electrolyte screening panels	34.7	52.7	7.2	5.4
Radiologic Studies - Chest X-ray	33.5	59.3	2.4	4.8
ECG - rhythm strip monitoring	31.7	60.5	5.4	2.4
Renal Function	30.5	55.1	9.0	5.4
Culture and Sensitivity	29.9	55.1	8.4	6.6
Radiologic Studies - MRI	27.5	65.9	3.0	3.6
ECG - 12 lead ECG	24.6	67.1	6.6	1.8
Liver Function tests	21.6	58.7	14.4	5.4
Protein tests	20.4	59.3	14.4	6.0
Bronchoscopy	16.2	70.7	8.4	4.8
Hormone tests	15.6	56.3	22.2	6.0
ECG - Holter Monitor studies	14.4	70.7	10.8	4.2
Cardiac Catheterization	13.8	73.1	10.2	3.0
Therapeutic Regimes				
Bed rest or activity level	76.0	16.8	1.8	5.4
Pharmacology - Pain-related	73.7	21.0	1.8	3.6
stress management	72.5	21.6	1.8	4.2
Adjunctive modalities - oxygen therapy	67.7	24.0	3.0	5.4
Surgical proc - Coronary artery bypass	64.1	26.3	2.4	7.2
Pharmacology - cardiovascular	63.5	31.1	1.2	4.2
Pharmacology - Pulmonary	62.9	31.7	1.2	4.2
Respiratory equip - Incentive spirometry	62.3	26.9	4.8	6.0
Pacemakers	60.5	31.7	2.4	5.4
Surgical proc - Angioplasty	60.5	29.3	4.2	6.0

2005 survey results of examination competencies courtesy of Gary Brooks.

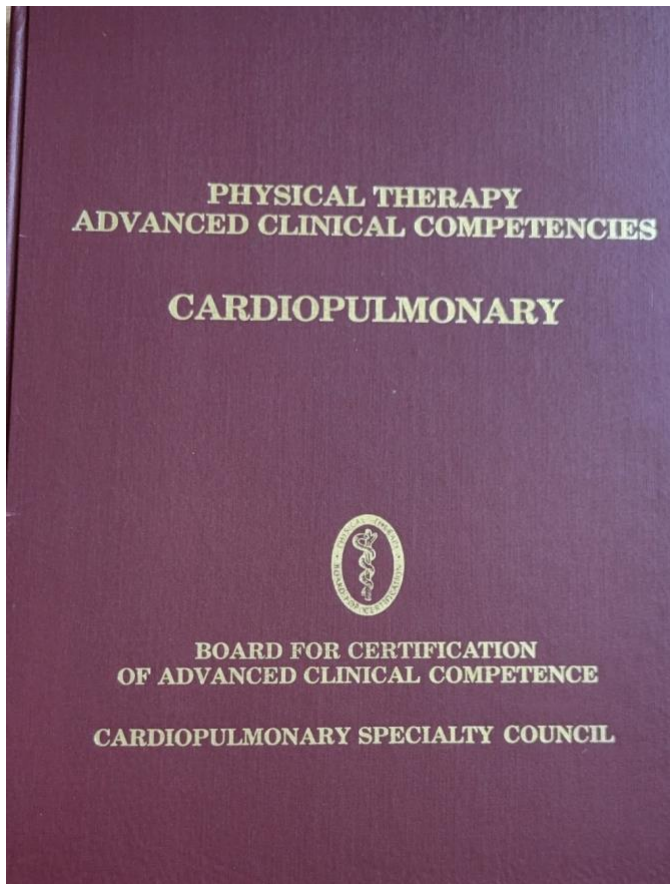
In 2011, Elizabeth Dean and colleagues published [“The First Physical Therapy Summit on Global Health: implications and recommendations for the 21st century.”](#) This publication expanded recommendations to include competency in lifestyle related conditions for entry-level PT practitioners.

In 2015, Pam, Meryl, and Gary collaborated again to publish a perspective article in CPTJ on the description of entry-level **practice** in CVP: [“Toward Entry Level Competencies in Cardiovascular and Pulmonary PT.”](#) *Cardiopulm Phys Ther J.* 2015 26(4):99-107 This article inspired the next revision of competencies. Morgan Johanson, Angela Campbell, Nancy Smith, Sagan Everett, Naomi Bauer, Pamela Bartlo, and Kristin Lefebvre formed a task force from 2017-2021 to revise and update the 2015 entry-level competencies with over 900 competencies. The work was initiated at CSM that year and the task force referenced The Guide to Physical Therapy Practice, CAPTE, ACAPT, and the Description of Specialty Practice (DSP) with level of mastery as not entry-level, familiar, emerging, and proficient. Surveys were mailed and the Delphi Method required 80% of responders to agree for the level of mastery for each competency topic and content. Responders included

clinicians and academic instructors, PTs with various years of experience, and generalists and clinical specialists (CCSs). It was eventually narrowed down to 651 items, took responders approximately 3 hours to complete, and only 471 items met the 80% level of agreement required by the Delphi Method. In July 2022, Johanson, et al published the most recent update: "Entry-Level Competencies in Cardiovascular & Pulmonary Physical Therapy." Smith and colleagues published ["Applying the 2022 CVP entry-level PT Competencies to PT Education and Practice" in May 2023.](#)

ADVANCED-LEVEL COMPETENCIES

Work on the specialization process in CVP physical therapy began at CSM in 1976. Scot Irwin led the discussion about the concept of specialization and advanced clinical competency. In 1978, the APTA House of Delegates recognized the first 4 specialty areas: cardiopulmonary, neurology, orthopedics, and pediatrics. Linda Carroll, Jan Duttarar, Suzanne Gibson, Tom Holtackers, Robert Huhn, Colleen Kigin, Linda Oder, and Eileen Shepard continued the work and by 1979 a competency committee with Catherine Certo, Linda Crane, Donna Frownfelter, David Hoeper, Jan Tecklin, and Cynthia Zadai was assembled. By 1980, the final work was submitted to the Board for Certification of Advanced Clinical Competence. In 1981, the CVP Section successfully submitted the required "Petition to Establish a CP Specialty Council," whose charge was to develop and administer the specialty examination. In 1983 the "Physical Therapy Advanced Clinical Competencies" was prepared and revised by members of the Cardiopulmonary Section and the Board for Certification of Advanced Clinical Competence as a study guide for the first PTs to take the CCS examination. Specialty competencies were divided into patient care, educational services, communications, research, administration, and consultation.



The original study guide for the CCS examination in 1983.

By 1985, the Board for Certification of Advanced Clinical Competence was renamed what we know today as the American Board of Physical Therapy Specialties (ABPTS). The first exams for the CCS were administered this same year and Meryl Cohen, Linda Crane, and Scot Irwin were recognized as the profession's first board certified cardiopulmonary clinical specialists. In contrast, as of 2024, the APTA had 549 board certified cardiovascular and pulmonary clinical specialists.

In 1987, revisions were made to the CCS study guide re-titled "Cardiopulmonary Patient Care Competency," and there was a need to complete a validation study to find if the clinical specialty was indeed advanced. The second edition was published in 1996 with contributions by Rhonda Barr, Lori Buck, Susan Butler, Larry Cahalin, William DeTurk, Laurita Hack, Dianne Jewell, and Steve Sadowsky.

From 2005-2007, the Cardiovascular and Pulmonary Specialty Council began the process of revalidating the specialty practice. Members of this team included Alexandra Sciaky, Angela Campbell, Anne Swisher, John Lowman, Anne Mejia Downs, Kris Ishii, Ana Lotshaw, Susan McNamara, Heidi Hahn Tymkew, and Laurita Hack. This resulted in the 2007 Description of Specialty Practice (DSP).

In 2019, “The Current Status of Cardiovascular and Pulmonary PT: an Update of the DSP” was published by Jeff Rodrigues, Angela Campbell, Ethel Frese, and Matthew Walko. This DSP provides the current advanced-level competencies in CVP specialty practice to guide exam candidates and specialty examination item writers.

THE FUTURE

The American Council of Academic Physical Therapy (ACAPT) was created as a subgroup by the APTA board of directors in August 2010 and merged with the Education SIG in 2014. ACAPT strives to connect academic educators with clinical educators to use competency-based education so that clinical skills and clinical decision making are part of the PT curriculum. While there are established entry-level and advanced-level competencies to measure clinical skills, is there a way for our profession to measure clinical decision making at the entry-level, in residencies, and for board certified clinical specialists? As the pace of research, publications, CPGs, and overall knowledge accelerate, how does CVP PT remain current from the classroom, conferences, and journals to produce outstanding clinicians? The CVP Academy will soon need to consider another set of revisions to both entry-level and advance-level competencies. A new task force and survey will need to be created with our emerging leaders and include recent changes in clinical practice (ie covid, long covid, dysautonomia, and new medications).

Pam Bartlo, PT, DPT, CCS



I received my Bachelors in PT from Daemen College in 1997 and then my DPT from D’Youville College in 2006. I’ve been a Board-Certified Specialist in Cardiovascular and Pulmonary PT since 2005. My clinical experience focuses on cardiovascular and pulmonary care but has also included experience in the rehab of adults with neurologic system impairments. Since 2004, I’ve been a full-time faculty, most recently joining Daemen University in Buffalo, NY. My research has been published in multiple peer-reviewed journals and textbooks and I’ve presented at numerous national conferences. I served on the CVP’s Board for 16 years as the Public

Relations Chair and then the Vice President. I am currently serving on the ABPTS' Cardiovascular and Pulmonary Specialty Council.

When did you first get involved in the CVP Section/Academy?

I started as the Public Relations chair for the Academy (then Section) in Fall of 2007.

Who were your mentors?

Dianne Jewell was the person originally responsible for bringing me into service in the Academy and she has always been an example of how to lead well and make a difference. Other mentors have included Ellen Hillegass, Ethel Frese, Anne Swisher, Annie Mejia Downs, and Meryl Cohen. Although not necessarily mentors, several colleagues have been on this journey with me and have shaped who I am as a CVP PT: Angela Campbell, Dawn Stackowicz, Dan Malone, Joe Norman, Sean Lowers, Kristin Lefebvre, Morgan Johanson, Ann Fick, Julie Skrzat, Rachel Pata, and more recently Mike Tevald. I can't thank these people enough for all the collaboration, teamwork, and inspiration they've provided.

How have you practiced and what are your proudest moments?

I started in a level I trauma hospital seeing all the cardiac and pulmonary diagnoses you can think of. However, this was 25 years ago and I live in a city where MDs are really conservative with what they let PTs do. I often had to bring in research showing why PT could help more and try to debunk sternal precaution myths. After I transitioned to teaching full time, I switched over to outpatient cardiac and pulmonary rehab as a per diem PT working about 2-3 days per month. I've been doing that for around 13 years. I truly love it and am proudest when I can really get someone to change their behaviors. It isn't easy, so every one is a big win.

What is your advice to give someone to keep updated in our field, and what worked for you?

Read the journal and attend conferences. As I said, I live in a city where MDs are conservative. I've stayed up to date with ICU mobility and other CVP improvements through reading, attending CSM and now Academy conferences, and talking with colleagues throughout the country. Just because something isn't being done in your area, doesn't mean it can't be done.

What do you identify as the most important issues for the future?

Advocating for our CVP PT services. Too many areas are losing PTs in CVP care. In my area, none of the hospitals have PTs as the standard of care for Phase I rehab. PT is only called in if the patient has a mobility issue. Many areas around the country don't have PTs as standard practitioners in Phase II rehab. We have also given away A LOT of our pulmonary practice. We need some strong advocates to get these things back. We are the specialists in this area and need to show that to others.

Gary Brooks, PT, DrPH



When did you first get involved in the CVP Section/Academy?

I got involved in the CVP Section soon after I started teaching in 1989, so early 1990s.

Who were your mentors?

Section leadership was so welcoming and inviting when I joined the Section. I think Donna Frownfelter was the President, and before I knew it I was writing a chapter in her textbook. Larry Cahalin was very supportive and encouraging as the Specialty Council Chair when I expressed interest in becoming a clinical specialist.

How have you practiced and what are your proudest moments?

After practicing in the "Chest PT" Department at MGH in Boston, I realized that CVP PT was where I wanted to focus. I was excited to join the faculty at Russell Sage College in Troy, NY, where I could impart CVP knowledge and skills to, and hopefully inspire, entry-level students. I also continued to develop as a clinician in cardiac and pulmonary rehab. After achieving my CCS, I broadened my horizons and pursued a doctorate in Public Health and added that perspective to my teaching.

What is your advice to give someone to keep updated in our field, and what worked for you?

Be open to opportunities as they present themselves, even if they appear in unlikely places. Serendipity played a large role in my career.

What do you identify as the most important issues for the future?

I've always stressed the importance of physical activity in health, looking beyond exercise. Can we create environments and societies that encourage greater physical activity in everyday life?

Alvaro N Gurovich, PT, PhD, FACSM



I received my Physical Therapy degree from Pontificia Universidad Católica de Chile in 1990 and worked as a clinician for more than 15 years in different fields such as sports medicine, cardiovascular rehabilitation, and human performance. I moved to University of Florida where I received my doctoral degree in Health and Human Performance in 2010. I completed my post-doctoral position at University of Florida College of Medicine, in the Department of Physiology and Functional Genomics, where I learned in vitro and in situ techniques that strengthen my translational research background. I am an active member of the American Physical Therapy Association, the American Physiological Society, the International Society for the Advancements in Kinanthropometry, and the American College of Sports Medicine. I serve as a reviewer in several high impact journals such as Medicine and Science in Sports and Exercise, Journal of Applied Physiology, Journal of Orthopedic and Sports Physical Therapy, European Heart Imaging Journal, and I am the Editor-in-Chief of the Cardiopulmonary PT Journal. I am a funded scholar with extra-mural grant from the NIH and the American Physical Therapy Association's Academy of Cardiovascular and Pulmonary Physical Therapy. My current lines of research are blood flow regulation, exercise-induced blood flow patterns, endothelial function, and oxidative stress translated to cardiovascular rehabilitation. I am currently a Professor of Physical Therapy and serve as Chair of the Department of Physical Therapy and Movement Sciences, Program Director of the Doctor of Physical Therapy program, and the Director of the Clinical Applied Physiology (CAPH) Lab at The University of Texas at El Paso.

When did you first get involved in the CVP Section/Academy?

At my first CSM (2012). I knew my field was cardiopulmonary so I attended the sessions and business meeting. I started to meet so many wonderful people and never stopped since then.

Who were your mentors?

I have had many mentors, most from either Chile or outside the PT world. First, Mr. Ramón Valdéz, Chilean PT and Professor when I went to school (he taught me that the rules exist to be broken). Mr. Raúl Valdéz, Chilean PT, father of cardiovascular rehabilitation in Chile. Prof. Atilio A. Almagiá, anthropology biologist who opened his research lab doors to my research on kineanthropometry. Dr. Juan Carlos Mazza,

Sports Medicine specialist who introduced me to lactate metabolism and the American College of Sports Medicine. Dr. Randy W. Braith, PhD, my PhD mentor. Dr. Judy Mueller-Delp, my post-doc mentor. Dr. Emmanuel Johns, PT, PhD, former DPT program director at Chapman University.

How have you practiced and what are your proudest moments?

I practiced ~15 years in Chile and my proudest moment was when, thanks to my ICU work, patients had longer lines so I could move them around the bed. Big win for PT in my hospital. Since I moved to the U.S., my proudest professional moment was when I was awarded the Linda Crane lectureship.

What is your advice to give someone to keep updated in our field, and what worked for you?

Read the journal (CPTJ and PTJ) every time you have a chance.

What do you identify as the most important issues for the future?

To show the value of PT and that nobody can do it better than us. We need to be united and raise the bar in PT education.

Morgan Johanson, PT, MSPT, CCS



When did you first get involved in the CVP Section/Academy?

2012

Who were your mentors?

Alex Sciaky, Ellen Hillegass, Rebecca Crouch, Angela Campbell

How have you practiced and what are your proudest moments?

Acute/ICU x 9 years at California Pacific Medical Center (PT liaison to Adult CF team and heart transplant team)

Coordinator of Inpatient & Outpatient CVP PT x 4.5 years at VA Ann Arbor

Co-founder and Co-director of VA Ann Arbor CVP PT Residency Program

President and Founder of Good Heart Education

SNF/TCU x 5 years at Grand Traverse Pavilions

Part-time faculty at University of Toledo

Full-time faculty at St. Catherine's University

Proudest Moments: Passing the CCS Exam, graduating the first CVP PT resident, finishing the Entry-Level DPT CVP PT competencies, starting my own company, Merit Award in 2022, working with the team updating the HF CPG

What is your advice to give someone to keep updated in our field, and what worked for you?

Teach/mentor, get involved in the Academy, read journal articles (journal club), attend CSM and fall conference, be active in research.

What do you identify as the most important issues for the future?

Increasing pay for PT and decreasing cost of DPT, not losing our practice (i.e., CR and PR), volunteers that will do the work for the Academy/Profession (i.e., completing CPG projects that get started), reimbursement for services.