



## Building Strength Before Surgery

**P**rehabilitation or “prehab” helps a patient increase and optimize strength, function, and nutrition prior to surgery. Its benefits are clear; prehab can decrease the length of a hospital stay and shorten the recovery time for a patient. In recent years, there has been an explosion of research showing the benefits of prehab and exercise for patients with cancer. Widespread acceptance and implementation of prehab for the oncology population has been slow, but experts at Yale Cancer Center and Smilow Cancer Hospital are helping to change that.

“Prehab is a crucial part of a patient’s care and needs to be part of the cancer care continuum,” said Scott Capozza, MS, PT, Oncology Physical Therapist at Smilow Cancer Hospital. “From the moment of diagnosis prehab should begin for patients. It prevents

**Scott Capozza, MS, PT  
and Brenda Leafe**

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functional loss and supports physical and emotional needs at the most distressing point of their life.”

“Prehab empowers patients through movement and education, and immediately establishes lines of communication with doctors, nurses, dietitians, social workers—the whole care team—and this equates to holistic, comprehensive care. We know what’s in their future and what to get them ready for.”

Brenda Leafe can attest to the benefits of exercise prehab. An episode of atrial fibrillation brought her to the emergency room on the Saint Raphael Campus of Yale New Haven Hospital, where a scan led to the discovery of a tumor on her liver and another on her colon. In December 2022 at the age of 81, she began chemotherapy for metastatic colon cancer. Brenda’s medical oncologist, Jeremy Kortmansky, MD, along with Kevin Billingsley, MD, MBA, Professor of Surgery (Surgical Oncology) and Chief Medical Officer for Smilow Cancer Hospital, suggested she begin prehab with Scott Capozza to prepare for surgery and allow her to return to chemotherapy soon after surgery.

“Brenda was already undergoing chemotherapy and her liver resection was going to be a risky procedure,” explained Dr. Billingsley. “In older patients, prehab can make a substantial difference prepping the patient to get through surgery safely, especially when undergoing preoperative chemotherapy, and Brenda responded very well.”

For every new patient referred for prehab, a physical therapist provides

standardized testing to determine baseline function, measuring upper and lower body strength, gait speed, and balance. A discussion about the patient’s potential challenges at home is also included—if there are stairs, especially—and then a personalized plan is developed.

Likewise, if nutritional issues are identified such as malnutrition or diabetes, the patient is encouraged to also participate in nutrition prehab. Lora Silver, MS, RDN, CDN, Outpatient Oncology Clinical Dietitian for Smilow Cancer Hospital, explained that nutrition prehab is essential to combat risk factors for surgical complications. “Similar to exercise prehab, the dietitian starts with a baseline evaluation of the patient’s current diet, changes in weight and muscle mass, and barriers to eating well. Then we personalize our recommendations and collaborate with the patient to optimize their diet and reduce barriers.”

Poor diet quality has been shown to have negative implications for recovery from cancer. For example, prehab greatly benefits patients who are scheduled for hyperthermic intraperitoneal chemotherapy (HIPEC), a surgical technique which delivers heated chemotherapy directly into the abdominal cavity. Lora says studies show that prehab including nutrition reduces length of hospital stay and improves wound healing and time to recover. “Nutritional prehab also offers concrete steps and a proactive approach that our patients appreciate.”

Whether referred for exercise or nutritional prehab, each patient’s plan has the same goal: to increase their

strength and function before surgery. Before Brenda’s diagnosis she walked everywhere with a cane, she had trouble navigating the stairs at home, and she wanted to improve her ability to care for her husband and carry his medical supplies.

At their first prehab appointment, Scott measured how far Brenda could walk within two minutes, which was 270 feet. Over the next six weeks leading up to her surgery, Scott and Brenda worked on several strengthening and balance exercises, and she was able to walk 310 feet—a gain of 40 feet. “I can see a big difference. My balance is better, I can go up and down stairs comfortably now, and I only use my cane outside,” Brenda said.

While Brenda had surgery to remove a portion of her liver as well as her gallbladder, she strongly believes the pre-surgery exercises helped with her recovery. “I was up and walking shortly after surgery and every day before my release from the hospital, but most importantly, it means everything to me to be strong enough to care for my sick husband. I can cook, I can take care of myself, and my strength is back. I feel better mentally and physically and can do things I didn’t think I could do.”

“Every patient benefits from prehab,” emphasized Scott. “Prehab sets the tone for the rest of their oncologic care and when a patient has the opportunity to take control—‘I can move’ or ‘I can fuel myself properly’—during the prehab phase, they are more likely to continue during active treatment and during survivorship. It sets the patient up for success.”