

Chemobrain Study Frequently Asked Questions

What is the Chemobrain Study?

The Chemobrain Study is an ongoing clinical trial investigating the effects of using a plasticity-based, non-invasive computer training program—the Posit Science® Brain Fitness Program™—on the quality of life of breast cancer survivors suffering from chemobrain. Preliminary phase one results of the study are complete.

Who led the Chemobrain Study?

The study was sponsored and led by researchers at Posit Science Corporation.

Why was the Chemobrain Study conducted?

An estimated 178,000 women in the United States were diagnosed with breast cancer in 2007, making it the most common malignancy in American women. Studies report that up to 75 percent of women who are diagnosed with breast cancer, and those who undergo chemotherapy treatments, experience a condition called chemobrain. Individuals who have chemobrain experience cognitive symptoms that include decreased memory and concentration, an inability to formulate words and thoughts, increased difficulty with learning new tasks, difficulty with multi-tasking, and other negative effects. These symptoms can adversely affect patients' sense of autonomy and hinder their ability to fulfill family, career, and community responsibilities. There are currently very few treatment options for chemobrain.

Previous studies have demonstrated that Posit Science programs improve symptoms associated with cognitive decline in older adults—decreases in memory, attention, and other changes—that are similar to the effects of chemobrain. Based on this earlier research and the principles of brain plasticity, researchers conducted the Chemobrain Study to determine if scientifically designed cognitive exercises could make positive changes in the brain function and quality of life of breast cancer patients who have chemobrain.

What did the Chemobrain Study find?

The study has found the following:

- 94 percent of study participants self-reported positive changes in their overall sense of well-being after completing the Brain Fitness Program.
- 89 percent of participants experienced improvements in their memory and attention.
- 83 percent of participants experienced higher energy levels.
- 83 percent of participants reported improvements in their mood.
- 78 percent of participants reported reduced stress levels in common life situations.

Why are these results important?

The preliminary results of this study demonstrate that breast cancer patients who suffer from chemobrain can take action to alleviate their symptoms and significantly improve

their quality of life—without interfering with medications or other ongoing treatments—by using a non-invasive computer training program.

How do these results change current thinking about brain fitness?

The Chemobrain Study results demonstrate that cognitive training can be helpful to people with cognitive impairments caused by conditions that are unrelated to normal aging. The results also show the potential use of cognitive training to address other conditions that involve cognitive deficits—including other types of cancer—and the need for scientists to investigate additional clinical indications for cognitive training exercises.

Who participated in the Chemobrain Study?

Eighteen breast cancer patients located across the United States and Canada participated in the study. All of the participants were female and their mean age was 49-years-old. Each of the participants had to meet two key criteria: They needed to have self-reported cognitive dysfunction after receiving chemotherapy treatment and they had to have undergone chemotherapy treatment within five years of giving consent to take part in the study.

Of the participants, two women were actively undergoing chemotherapy treatments and 15 women were taking estrogen blockers or enzyme inhibitors that are part of standard cancer treatments.

How was the Chemobrain Study conducted?

The study is a single site, open label clinical trial. Participants trained on the Brain Fitness Program for 40 hours (one hour a day, five days a week) and were asked to complete several self-report assessments before and after training that addressed the areas of cognition, health status, and stress. These assessments included the Cognitive Self-Report Questionnaire (CSRQ-25 and CSRQ-64), the Perceived Stress Scale (PSS-14), and the SF-36 Health Survey by QualityMetric.

Previous chemobrain research sponsored by Posit Science Corporation:

- Kim, S.J., Stasio, C., Spina, L.M., Tinker, D.E., Mahncke, H.W. Effects on health-related quality of life in individuals with “chemobrain” using a brain-plasticity-based training program. Poster presented at the International Neuropsychological Society Conference, February 6-9, 2008, Waikoloa, HI.
- Kim, S.J., Stasio, C., Borrow, J., Cloud, K., Spina, L., Mahncke, H.W., Merzenich, M.M. Alleviation of “chemobrain” symptoms: A non-invasive, computer-based approach. Poster presented at the Society for Neuroscience Conference, November 3-7, 2007, San Diego, CA.
- Kim, S.J., Stasio, C., Borrow, J., Cloud, K., Spina, L., Mahncke, H.W., Merzenich, M.M. A non-invasive, computer-based approach for alleviating “chemobrain” symptoms in breast cancer survivors. Poster presented at the 10th Nottingham International Breast Cancer Conference, September 18-20, 2007, Nottingham, United Kingdom