INSTITUTE ON DEVELOPMENT AND DISABILITY

Translated Research Article in Plain Language

by the University Center for Excellence in Developmental Disabilities

Key Words:

Systematic review: a study to go over the published studies about a certain topic and create a summary.

Augmentative and alternative communication brain-computer interface (AAC-BCI) systems: Some people with disabilities have a hard time talking and moving parts of their body to let others know their thoughts, feelings, and needs. AAC-BCI systems can help people use a computer with their brain signals. That way they can use their brain signals to type or choose messages, without moving their body.

Authors are from:
1. Institute on Development and Disability, OHSU;
2. Health Sciences and Human Services Library, University of Maryland, Baltimore, MD;
3. Department of Neurology, OHSU

Peters, B, Eddy, B, Galvin-McLaughlin, D, Betz, G, Oken, B, & Fried-Oken, M. A systematic review of research on augmentative and alternative communication brain-computer interface systems for individuals with disabilities. *Frontiers in human neuroscience*. 2022;16. doi:10.3389/fnhum.2022.952380

Learn more at www.ohsu.edu/ucedd

What is the name of the article?

A systematic review of research on augmentative and alternative communication brain-computer interface systems for individuals with disabilities

Who are the authors of the study?

Betts Peters,[1] Brandon Eddy,[1] Deirdre Galvin-McLaughlin,[1] Gail Betz,[2] Barry Oken,[3] & Melanie Fried-Oken[1]

What was the goal of this study?

We wanted to find out:
1) What methods have been used in AAC-BCI studies for people with disabilities?
2) What do we know about the people with disabilities who were in the studies?
3) What kinds of AAC-BCI systems have they tested?
4) How well do AAC-BCI systems work for people with disabilities?
5) Do AAC-BCI systems work as well for people with disabilities as they do for people without disabilities?

What did we do?

We looked for articles about people with disabilities using AAC-BCI systems for communication tasks. We read the articles to learn about what happened in each study. Then we summarized what we learned.

What did we learn?

We found 73 articles about studies where people with disabilities used an AAC-BCI system for a communication task. Most of these studies were small and used informal study designs. Many articles did not say what the people in the study thought about the AAC-BCI systems they tried. Articles did not always describe the people in the study clearly. Most studies used AAC-BCI systems where people looked at things on a computer screen. Others used AAC-BCI systems where people listened to words or sounds, or felt vibrations. AAC-BCI systems worked very well for some people with disabilities, but did not work well for others. There was not enough information to say if AAC-BCI systems worked better for people with or without disabilities.

Why is this important?

AAC-BCI systems are made for people with disabilities, but a lot of AAC-BCI research only includes people without disabilities. It is important to look at how AAC-BCI systems work for the people who will use them. It is also important for researchers to use good research methods, and to share what they learn in a way that is easy to understand. This systematic review shows where things stand with AAC-BCI research for people with disabilities, and what researchers can do better in the future.