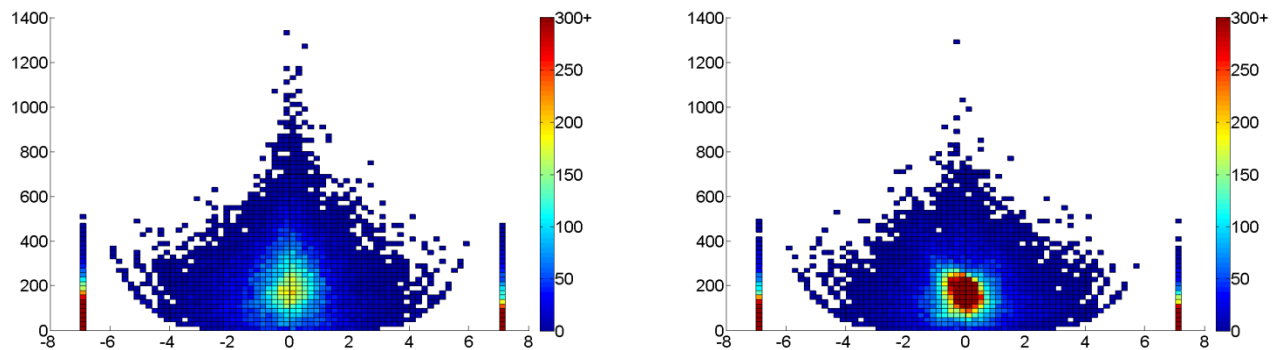


Typical Arm Activity in Adults



What am I seeing?

These are examples of arm activity from two healthy adults. Movement was recorded from accelerometers worn for 24 hours, with one accelerometer on each wrist. The graphs show every second of movement during that time.

- The vertical axis (Y-axis) shows how intensely the arms are moving.
- The horizontal axis (X-axis) shows the amount of activity of one arm compared to the other arm. The far left bar of the graph (values of -7) shows only dominant arm movement. The far right bar of the graph (values of +7) shows only non-dominant arm movement.
- The middle of the graph (from -6 to +6) shows activity of both arms moving at the same time.
- The very middle of the picture (values around 0) shows activity when the arms are contributing equally. Data further from the middle shows a greater contribution of one hand versus the other.
- The colors represent how often activity occurs at each intensity and with varying contributions from each arm, with blue (or cooler colors) indicating less frequent activity and red (or warmer colors) indicating more frequent activity.

What do the graphs tell me about hand and arm movement?

Contrary to what we imagine, people actually use their dominant and non-dominant arms most of the time, rather than mostly using only dominant arm. This is why the figures are symmetrical.

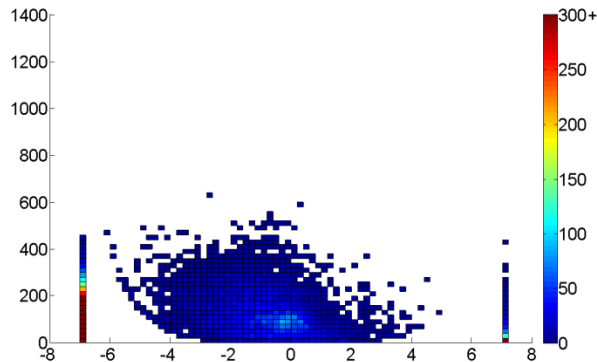
- Most of our arm movements are low intensity. This is why the bottom-half of the figures have warmer colors and are wider.
- The 'rims' of the bowl-like shape represent activity where one hand is moving while the other is relatively still. An example of this would be placing objects in a container with one hand and holding the container with the other.
- The 'warm glow' in the middle represents lower intensity movement where the arms are working together. An example of this would be cutting food with a knife and fork.
- The top peak represents higher intensity movement with both hands. An example of this would be stacking boxes on a shelf.

We have collected these data and made graphs for more than 70 people now. All the graphs look similar, suggesting that arm and hand activity in healthy adults is consistent across people.

Impaired Arm Activity in Adults with Stroke

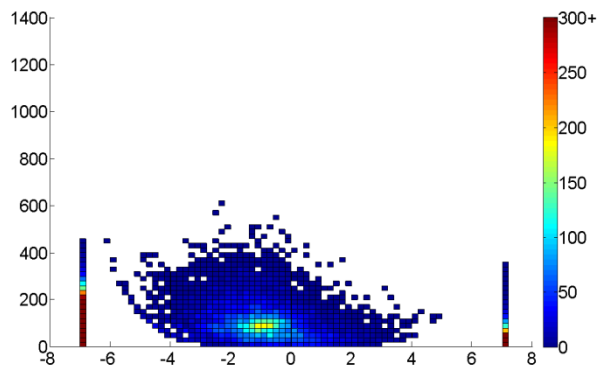
Arm activity in adults with stroke is highly variable. Below are three example graphs. The graphs look different than the ones on the first page, from those who do not have arm impairments. Graphs from people with stroke are usually less symmetrical, indicating that people with stroke use the non-affected (good) arm more of the time. The graphs are also usually shorter and smaller, indicating few or no high-intensity activities.

What do the graphs tell me about hand and arm movement after stroke?



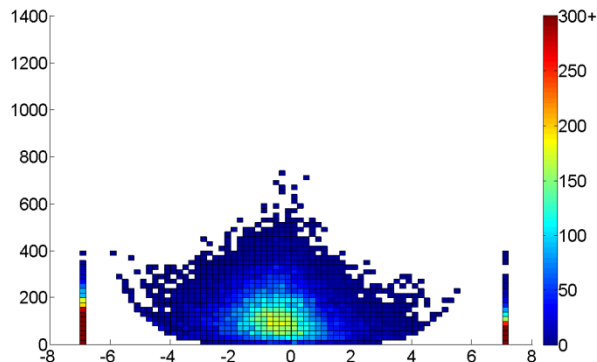
Example: someone whose arm is severely affected after stroke

This person uses the unaffected arm and hand for most daily activities, as indicated by the red bar at -7 and the asymmetrical picture. He or she doesn't move much and most movements are low intensity, as indicated by the blue colors and the low peak.



Example: someone whose arm is moderately affected after stroke

This graph is similar to the first one, although the person has better functional motor capabilities. Compared to the previous one, this person is more active, as indicated by the warmer colors.



Example: someone whose arm is mildly affected after stroke

This graph is from a person with nearly normal functional motor capabilities. This graph looks the most like the graphs from the healthy adults on the previous page. This person uses the affected arm and hand almost as much as the unaffected hand, as indicated by symmetrical picture.