IEEE-CNSV
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Founder and CEO
Who We Are

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Due to tremor people lose their ability to complete simple tasks like eating.
Available Treatments

Medications:
• Propranolol
• Primidone
• Topiramate and others

Deep Brain Stimulation

Non-pharmacologic options:
• Weighted utensils
• Tremor suppression orthoses

Vary in effectiveness and side effects
Typically reserved for severe tremor and can be associated with serious complications
Little evidence that these are effective

There is a need for a non-invasive assistive device to help manage tremors in individuals with ET
Feasibility Study of the ACT
(Active Cancellation of Tremor Device)

- Embedded Accelerometer
- Angular Sensor
- Actuator: $K_i, K! , J, i$
- Stabilized Output
- Attachment for General Object (e.g. spoon)

Graph showing:
- Disturbance Frequency (Hz)
- % Cancellation
- Frequency Range of Interest (FROI)

Classes:
- 1cm (Class 2: marked)
- 2cm (Class 3: Disabling)
- 3cm (Class 3: Disabling)
- 4cm (Class 4: Extreme)
Video of Initial Testing
Initial work was highly promising. Awarded Phase II

Recruited subjects who met diagnostic criteria for ET with a complaint of spilling food when eating

Performed 3 separate tasks with device, blinded to activation
  - Holding
  - Eating
  - Transferring

**Primary outcome:** Improvement in tremor from baseline with device on compared to off using the Fahn-Tolosa-Marin Tremor Rating Scale

**Secondary outcome:** Clinical improvement rated by subject using the Clinical Global Impression Scale (CGI-S)
## Clinical Results

<table>
<thead>
<tr>
<th></th>
<th>N=11</th>
<th>ACT Off</th>
<th>ACT On</th>
<th></th>
<th></th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>SD</td>
<td>Mean</td>
<td>SD</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Change in ($\Delta$TRS) in holding</td>
<td>0.36</td>
<td>0.81</td>
<td>1.00</td>
<td>0.89</td>
<td>0.095</td>
<td></td>
</tr>
<tr>
<td>Change in ($\Delta$TRS) in eating</td>
<td>0.00</td>
<td>0.45</td>
<td>1.18</td>
<td>0.98</td>
<td>0.003*</td>
<td></td>
</tr>
<tr>
<td>Change in ($\Delta$TRS) in transferring</td>
<td>0.27</td>
<td>0.65</td>
<td>1.18</td>
<td>0.75</td>
<td>0.006*</td>
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<tr>
<td>Holding CGI-S</td>
<td>3.64</td>
<td>0.81</td>
<td>3.00</td>
<td>1.31</td>
<td>0.21</td>
<td></td>
</tr>
<tr>
<td>Eating CGI-S</td>
<td>4.27</td>
<td>0.47</td>
<td>2.45</td>
<td>1.51</td>
<td>0.002*</td>
<td></td>
</tr>
<tr>
<td>Transferring CGI-S</td>
<td>3.82</td>
<td>1.47</td>
<td>2.45</td>
<td>1.37</td>
<td>0.036*</td>
<td></td>
</tr>
</tbody>
</table>
**Signal Analysis**

- **Device Off**
- **Device On**

**Tremor Peak**
- **Device Off**
- **Device On**

- **71% Cancellation - Transferring**
- **76% Cancellation - Eating**
- **72% Cancellation - Holding**
Video of Trials

LIFT labs

liftlabsdesign.com
Current treatments have shortcomings. Liftware is a response to this need.
Multiple Attachments
Not just a spoon: several different attachments are coming soon.

Compact and Portable
It’s easy to take out to restaurants.

70% Tremor Cancellation
Over 100 different algorithms were tested over 2 years.
Engineered to Simplify Your Life

Multiple Attachments
Fork, soup spoon, gripper and others coming soon.

Battery
Ultra-thin rechargeable battery will last for several meals.

Sophisticated Technology
Cutting edge electronics will work to actively detect and stabilize your tremor.
We launched our product last month, partnered with a foundation, and have had tremendous support.
Beta Users

Everything is delightful … and nearly splash-free! The Liftware spoon is changing my life…really.

Until Lift Labs, there was the disturbing prospect that a time would come when I wouldn't even be able to feed myself.

I had Chinese food yesterday and as usual with a regular spoon, it went all over unless I used two hands to hold it. Today I brought the spoon to work and am now eating my leftovers with one hand and not one piece falling all over the place. This is absolutely incredible.
Production Status
Launch Reception

International Recognition – working on distribution options for Europe and rest of the world.

Taking orders for Canada

Working with Neurologists, Occuational Therapists, and Care Homes.

“Ever since my grandpa has been unable to feed himself it's really put into perspective how much being able to be self reliant for the simple things means”

Donated through Bitcoin
Working on Additional Technologies

This is an actual result. Stay tuned.
Get Liftware:
LiftLabsDesign.com/order