Wearable Technologies: What are they and how can they assist someone with a Disability

Presented by:
Carolyn Phillips and Martha Rust with contributions by TFL team
www.gatfl.gatech.edu
Tools for Life Mission

Tools for Life, Georgia's Assistive Technology Act Program, is dedicated to increasing access to and acquisition of assistive technology (AT) devices and services for Georgians of all ages and disabilities so they can live, learn, work and play independently and with greater freedom in communities of their choice.
Visit Us Online!
What is Assistive Technology?

Assistive Technology (AT) is any item or piece of equipment that is used to increase, maintain or improve the functional capabilities of individuals with disabilities in all aspects of life, including at school, at work, at home and in the community.

• Assistive Technology ranges from no/low/light tech to high tech devices or equipment.
Why Assistive Technology?

• For a person without a disability, assistive technology makes life easier.
• For a person with a disability, assistive technology makes life possible.

Tip: USE AT! I have yet to meet a successful student with disabilities who doesn’t use any AT.
Wearable Facts

- Invention of the first wearable device can be traced to the creation of the portable watch in the 16th century
- In 1979 Sony invented the Walkman
- In 2000, the first Bluetooth headset was sold
- 2004, the first GoPro was launched
- Google Glass released in 2013
- ABI Research estimates the global market for wearables in health and fitness could reach **170 million devices** by 2017
- Global wearables market is expected to reach a value of **19 billion U.S. dollars in 2018**
Wearables!

- Nokia has been developing magnetic or vibrating tattoos that can alert the user when there is an incoming call or a warning alert for a dead battery from a mobile phone.
- Remote Brain Machine Interface (RBMI) can be defined as a means to control a machine that is in a different geographical location than the user.
- Increase of using wearable in the aging population.
- Increase of using wearable technologies for people with disabilities.
CCS Wearables Forecast

**CCS Insight**

**Global Wearables Forecast, 2016-2020**

**Volume**

- **2016**
  - Fitness, activity & sports trackers: 15 million
  - Wearable cameras: 61 million
  - Virtual & augmented reality headsets: 2.2 million
  - Smartwatches & smartphone companions: 1.7 million

- **2020**
  - Fitness, activity & sports trackers: 98 million
  - Wearable cameras: 187 million
  - Virtual & augmented reality headsets: 10.2 million
  - Smartwatches & smartphone companions: 10.4 million

**Value**

- **2016**
  - $14.0 billion

- **2020**
  - $34.2 billion

**Device sales in 2020**

- **Eyewear**
  - 97 million
- **Wristbands**
  - 164 million
- **Tokens, clip-ons & jewellery**
  - 4 million
- **Watches**
  - 110 million
- **Hearables**
  - 9 million
- **Wearable cameras**
  - 25 million
- **Other**
  - 2 million

February 2016

info@ccsinsight.com / @ccsinsight
See for Yourself

What is OrCam?

OrCam is an intuitive portable device with a smart camera designed to assist people who are visually impaired.

OrCam gives independence.
NuEyes

- [https://nueyes.com/](https://nueyes.com/)
- Pro Coming End of Summer 2017 - $6,195
- Variable Magnification from 1x-12x
- Various contrast and color changes
- Voice Activated
- Wireless
- Lightweight Design
- 2 Year Warranty
- Text-to-Speech (OCR)
- Stream TV and Movies to the Glasses
- Full Android Computer
- Internet Browser
- Email
- Barcode and QR Scanner
- Social Media Applications
Apple Watch 3

- Cellular
  - Leave phone behind
  - Stream Music
- “Hey Siri”
- Can be used for fitness
  - Heart Rate Monitor
  - GPS
  - Accelerometer
- Haptic feedback
- Breathe App
- From $329+
Embrace Watch

- Monitors Nervous System
- Monitors Physical Activity
- Monitors Sleep
- Around $249
- Works on iOS and Android

https://www.empatica.com
Watchminder

- Rechargeable battery
- 65 pre-programmed messages to chose from
- 30 daily recurring alarms
- Create your own personalized messages
- Helpful training and reminder modes
- Vibrating alert
- Countdown timer
Octopus by Joy

- Smartwatch for Kids
- Icon Friendly
- Watch, Scheduler, and Assistant
- Visual Reminders
- Octopus by Joy
GPS Tracking Devices

- Find My iPhone
- Find My Friends
B-Calm

• “acoustic shield”, allowing the individual to have control of the sound environment
• helps reduce off task behaviors and irritability
• disturbing noises are blocked and replaced with familiar and soothing sounds
Snug Vest

• inflates to provide adjustable and evenly-distributed pressure to the torso for a comforting hug-like squeeze without pressure placed on the stomach or chest.
• promotes independence as the user can self-inflate their vest in a discrete way to get the exact amount of safe pressure they need. Snug Vest enables the user to complete daily tasks with ease anywhere they go!
OTvest

- Denim weighted vest
- Adults and Children
- Can improve balance
- Trunk stability
- Motor Coordination
- Stress Reduction
- Attention
- Autism
- http://otvest.com/
The Welt

- Kickstarter
- Smart Belt
- Starts at $69
- Keeps track of:
  - Steps
  - How long you sit
  - Waist
Nike FLYEASE Shoes

- Created for both Children and Adults
- Type of zipper that goes around the heel that makes it easier to put shoes on and off
- Lots of styles and colors
- $58 +
The Bruise Suit

- Smart injury detection suit for athletes with loss of sensation.
- It applies a recyclable pressure-sensitive film to indicate the severity of injuries. High risk areas are covered with disposable, made-to-fit film sheet inserts.
- If an area is excessively stressed during an accident, the film will irreversibly change color. After training or competing, injured areas can be easily spotted and effectively treated.”
Disabled Athletes Using Smart Injury Detection Suit to Find Injuries

The creative minds at the Royal College of Arts have designed The Bruise, a new smart injury detection suit that helps treat injuries quickly and efficiently for disabled athletes. What is amazing about the Bruise is that it is designed to change colors on impact using a recyclable pressure sensitive film to indicate the severity of an injury.
Rheo Knee

- Auto adaptive real-time stance and swing control.
- Dependable and easy swing initiation on all surfaces.
- Automatic stumble recovery.
- Weatherproof design allows exposure to fresh water splashes.
- Accompanying Össur Logic app for iOS devices provides.
- Smart Extension makes raising from a squatted position easier with less resistance.
- Facilitates stepping over obstacles and stepping backwards.
Neutun

- Makes it easy to track, manage and live with epilepsy
- App for Smart Watches
- Useful for:
  - Medication Management
  - Care Circle
  - Health Insights
  - Log Seizures
• Measures and tracks anxiety to help you better understand behavior and prevent meltdowns.
GlassOuse

• Helps people control electronics without using their hands.
• Based on your head movements, it moves the cursor onscreen. You bite on a blue extension to click, and it can go a week without charging.”
• [https://vimeo.com/158593763](https://vimeo.com/158593763)
Muse: The Brain Sensing Headband

• Put on the Muse headband, put on your earbuds, start the app, and close your eyes. Immerse yourself within the sounds of a beach or rainforest.
• While you meditate, it measures whether your mind is calm or active, and translates that data into weathers sounds.
• When you're calm, you'll hear peaceful weather sounds. When your mind wanders, the weather will intensify, guiding you back to a calm state.
Serene

- Converts any TV Audio output into an infrared light beam for wireless transmission to a receiver
- Dramatically broadens the acoustic sweet spot of your living room.
- Be able to clearly hear all dialogues and stereo sounds in your movie or TV program.
BuzzClip

- small and discreet wearable for people that are blind or partially sighted
- uses ultrasound to detect obstacles that may lie directly in one's path
- offers essential head level obstacle detection
- $149

BuzzClip
Fidget Ring

• Similar to fidget toys; except you can wear them!
• Helps for people who are anxious or have trouble focusing on the something.
Lumo Lift

• Lumo Lift is a tiny posture coach and activity tracker that works with a free iOS and Android app to help you sit straighter, stand taller, and look better.

• Sends gentle vibration alert when posture needs to be corrected
UPRIGHT- Posture Trainer

• Short term training, with long term results; by training with Upright only 15 - 60 minutes a day, you will have improved core strength & muscle memory to maintain a lifelong habit of good posture.
e-Handle

- Handle/grip for e-readers, tablets and iPad Minis
- Safe way to hold devices with better grip, control and functionality
- Rotates 360 Degrees; Easy to use; Adjustable; Detachable
CellHandle

Wearable tech for all phones and cases
Great for larger phones
Safe way to hold and use phones
Solves dexterity issues Rotates; adjustable; detachable
PopSocket

• A grip, a stand, a wrap, and more for phones and tablets.
• They make holding tablets and e-readers more comfortable and secure.
• With the PopSockets Mount companion product, they attach to nearly any vertical surface, including dashboards, mirrors, bed posts, refrigerators, and walls, for convenient hands-free viewing.
Modular hose -tabX Tablet Holder and Plate

- This solution is great for situations when there is no surface to attach to hold up your tablet.
- Whether lying on the sofa or sitting in a chair/wheelchair, the adjustable straps help hold it in place for hands free operation.
- Attach this tablet holder to your leg
Virtual Reality

- Market is Growing!
- Education
- Gaming
- Opportunity to experience an experience without being there
LVL: Hydration Monitor

- Fitness Tracker that will track hydration
- Aims to improve overall health
- Created by medical student at University of TX who had a stroke due to dehydration
- BSX Athletics
- Shipping 2017
VivaLnk Fever Scout

- eSkin technology
- Monitor body temperature
- Worn near the armpit
- Works with app to track data
- $59.99
- https://feverscout.com/
Vital Scout

- Wireless Patch
  - Worn over heart
- Monitors Stress and Physical Health
  - Gives Alerts
- Body Temperature
- Respiration Rate
- Sleep Status
- Heart Rate
- Stress Levels
- Activity/Training
• Stylish smart glasses  
  • Prescription  
• Will track your activity,  
• Subtly send you notifications  
• Use bone conduction audio tech to provide music without earbuds  
• Touch interface right on the frames  
• https://www.enjoyvue.com/
My Question to You:
What have you learned today?
https://www.statista.com/topics/1556/wearable-technology/
http://dl.acm.org/citation.cfm?id=1358913
https://static1.squarespace.com/static/516c369de4b00b44ca2bcdce/t/527fee38e4b0217581602d6e/1384115768724/wearable-computing-the-next-big-thing-in-tech.pdf
http://www.scientific.net/AST.85.11.pdf
http://thirdwavefashion.com/2016/06/wearable-tech-for-the-disabled/
http://www.choosemuse.com/
http://www.uprightpose.com/
http://www.scottpaultech.com/
http://www.modularhose.com/Assistive-Technology/mh-Tablet-and-Device-Solutions/130701
http://www.sereneinnovations.com/tvdirect-private-tv-listening-headset
Disclaimer: Produced by Tools for Life (TFL), which is a result of the Assistive Technology Act of 1998, as amended in 2004. TFL is a program of the Georgia Institute of Technology, College of Design, AMAC Accessibility Solutions and Research Center and was made possible by Grant Number H224C030009 from the Administration for Community Living. Its contents are solely the responsibility of the authors and do not necessarily represent the official views of HHS.