

## Mobility Unlimited Challenge Global User Survey Results

As part of our research process while designing the Challenge, we ran a global survey targeting people with limb difference or paralysis to find out what they wanted from their devices. More than 110 people completed our survey, with respondents from every inhabited continent.

Country	# Respondents
South Africa	51
UK	11
United States	8
Australia	2
Canada	2
Brazil	1
Cambodia	1
India	1
Mexico	1
New Zealand	1
Unknown	1
Zambia	1
Zimbabwe	1
<b>Total</b>	<b>82</b>

## **Mobility impairment**

	Severely	Somewhat	Mildly	Not at all
Mobility outside and between buildings	57.3%	33.3%	5.3%	4.0%
Mobility inside buildings	41.3%	36.0%	22.7%	0.0%
Using transportation	57.9%	28.9%	9.2%	3.9%
Overall independence	47.4%	29.5%	21.8%	1.3%

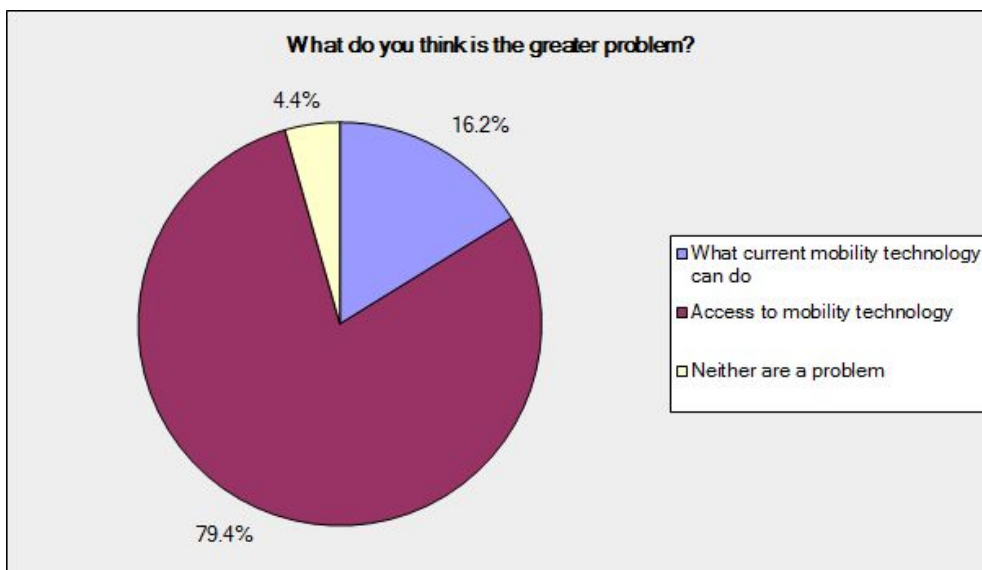
## Activities made difficult by mobility impairment

#	Activity	No. Responses
1	Dressing	26
2	Toilet	22
3	Bathing	21
4	Cooking	16
5	Cleaning	15
6	<b>Walking</b>	15
7	<b>Accessing buildings</b>	14
8	<b>Driving</b>	10
9	Bladder	9
10	Eating	9
11	Sexual function	9
12	<b>Getting in and out of the car</b>	8
13	<b>Transport</b>	8
14	Bowel	7
15	<b>Getting from A to B</b>	7
16	<b>Shopping</b>	7
17	<b>Public Transport</b>	6
18	Reaching high places	6

19	Work	6
20	Everything	5

#### How satisfied are you with this AT?

Answer Options	Very unsatisfied	Unsatisfied	Satisfied	Very satisfied	Response Count
Manual wheelchair	4	9	30	5	48
Powered wheelchair	1	5	19	6	31
Orthotic brace	0	6	3	0	9
Functional electrical muscle stimulator	1	3	3	1	8
Powered exoskeleton	0	3	3	0	6



How important do you think it is that future mobility technology enables you to do the following activities? (Average score shown)

#	Activity	Score
1	Overcoming barriers and obstacles (e.g. at entrances to buildings)	9.09
2	Navigating rough or uneven terrain	8.56
3	Going up and down stairs	8.23
4	Exercising / conditioning the body	8.23
5	Using public transport	8.15
6	Driving a car	8.03
7	Reaching high objects	7.97
8	Cycling	6.45

How would you rank the importance of research into the following areas and technologies? (Average score shown)

#	Technology	Average Score
1	All-terrain & standing wheelchairs	8.33
2	Reducing the cost of existing technologies	8.23
3	Electrical muscle / spinal cord stimulation	8.20
4	Robotic exoskeletons	7.91
5	Autonomous wheelchairs	7.65
6	New types of control systems (e.g. improved eye tracking and voice control)	7.53
7	Brain-machine interfaces / linking the brain to a computer directly	7.29
8	Assistive robotics (e.g. robotic arms on wheelchairs / robot assistants)	7.19
9	Improved braces / orthotics	6.87

### Ideal mobility-related assistive technology

Manual standing wheelchair with total adjustability, great balance, ultralight weight and forgiving of pressure-issues; all in an affordable package for those who can benefit from same
All terrain manual chair
All terrain lightweight electric wheelchair with long range over difficult terrain
A powered wheelchair that could cope with steps and thresholds, fit through normal door sizes, lift me to standing eye level and easily transfer into a vehicle .
Self driving cars, robotic loading assistance
Exoskeleton suit that is light, it attaches itself to the body and reacts to thoughts and voice commands. It takes the user walking, running and is rugged enough to go hiking
Robotic hand enabling dexterity
Something that allowed you to go up and down stairs and rough ground in smooth timely way and allowed you to put in whatever function you could so not sat still and cold if have hand and arm function
Being able to determine going through narrow spaces so I won't get wedged in.

A stand-up wheelchair that can also climb stairs

An electronic implant that by-passes the damage in the spinal cord and transmits all signal to and from the brain to the entire body

For wheelchairs to be able to go over most surfaces because every time you hit something even as small as a stick sometimes it literally feels like you will catapult out the chair

A computer controlled replacement for my right ankle that is controlled by my brain

FES and exoskeleton combined

A powered wheelchair which is small enough to use to go to shops and restaurants but also has a set of easily interchangeable wheels for off road use. These could then be kept outside so you do not make your home filthy. Or a machine which cleans power wheelchair wheels. There is one on the market made in Scandinavia but is only suitable for 4 wheel power chair and standard power chairs have 6 wheels.

lightweight, durable wheelchair

Have different wheels that fit same wheelchair

Hover chair (kids v excited!)

Exoskeletons

Be able to convert to a motorized chair by the push of a button. Climb up stairs, lift height to a standing height when in a crowd of standing people. Lightweight and durable.

A device like a scanner that can pinpoint the exact injury and resulting damages and reverse it all.

User worn device to allow mobility away from wheelchair in short area, to get through door, into bed, up step, etc.

Exoskeleton

Something that would allow for better sphincter control both for bowels and bladder.

Microchip in spine to walk unaided

Voice device

Exoskeleton - brain / spinal implant to stimulate control muscles

Very light-weight exoskeletons and wheelchairs that can change to standing, sitting and even lying i.e transformer-like. Cars that can accommodate a motorised wheelchair in the driver's seat and be driven by the wheelchair controls

Robot carer

voice driven cars

1. Firstly technology that doesn't just exist but that is actually affordable

2.Viable replacement/prosthetic vertebrae that allow for movement (essentially circumvention the problems of spinal fusions)
3. Something (nerve/muscle stimulator) that would essentially reverse spinal cord injury that would enable one to regain function and movement.
4. Technology that could suspend gravity
Getting a standing wheelchair and be able to stand to do my hobby that is woodwork
Voice controlled driven car, door openers, light switches, tv etc
A computer or telephone that is completely and easily voice and eye activated. A wheelchair that is voice activated.
Bodysuit/device that "bypasses" damaged spinal column allowing for full use body.
Exoskeleton
Avatar suit - complete robotic suit with brain interface to provide normal mobility
Exoskeleton jumpsuit
Exoskeleton function as an able body person.
A lightweight wheelchair that is easy to propel that isn't so expensive, making it affordable for the ordinary man on the street.
wheelchair that can stand, go fast, lightweight, foldable, climb stairs
robotic skeleton
Strong reliable compact folding lightweight wheelchair at affordable price
wheelchair cushion or padded pants that massages bum and increases circulation flow - preventing pressure sores
Doing all of the above
A wheelchair with rain and sun shelter, front baby's chair, side mirrored wheelchair, foldable footrests, adjustable seat (to climb the bed) and light reflecting stickers or torch (for night outdoor)
Wheelchair that can climb stairs
Something which connects to the brain and allows you to move your hands

### Ideal mobility device

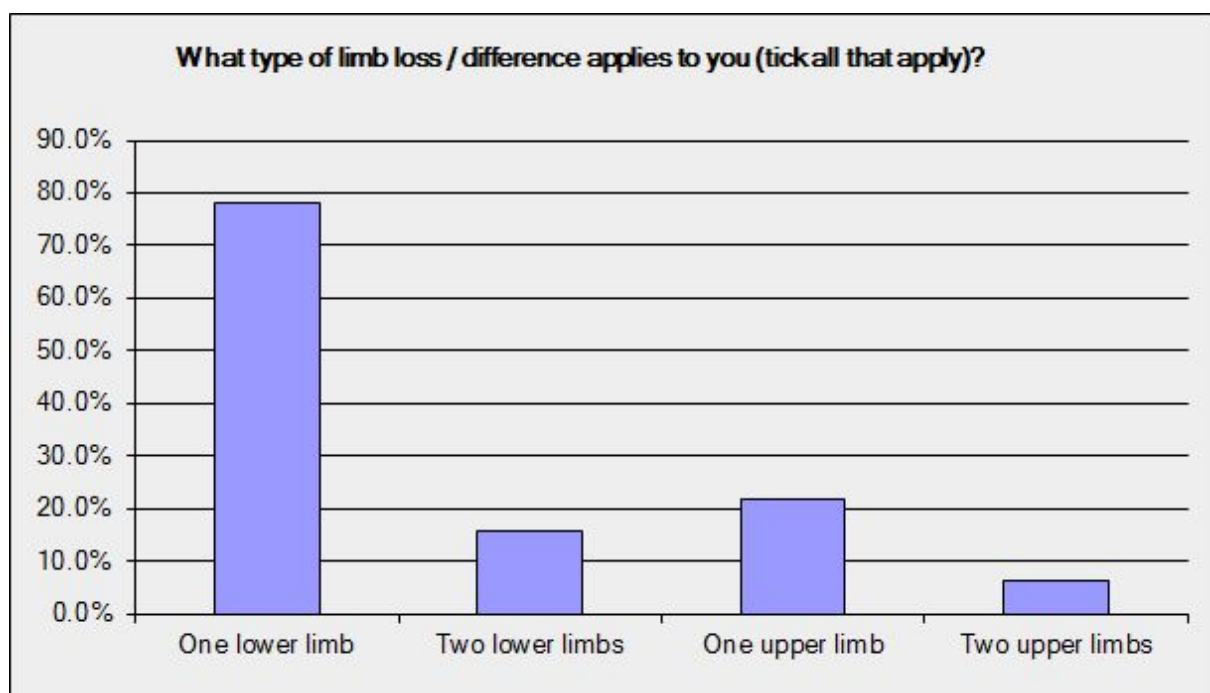
#	Ideal Mobility Device	Count
1	Exoskeleton	11
2	Standing wheelchair	5

3	Neuroprosthetic	4
4	Stair climbing wheelchair	4
5	All terrain wheelchair	4
6	Modular wheelchair	3
7	Lightweight wheelchair	2
8	Robotic arm	2
9	Voice control device	2
10	Bladder control	1
11	Brain machine interface	1
12	Chair that can detect narrow spaces	1
13	Cheap lightweight power chair	1
14	Hover chair	1
15	Power chair for curbs and doorways	1
16	Self driving car with robotic transfer	1
17	Wearable device for mobility outside wheelchair	1

## Limb Loss / Difference

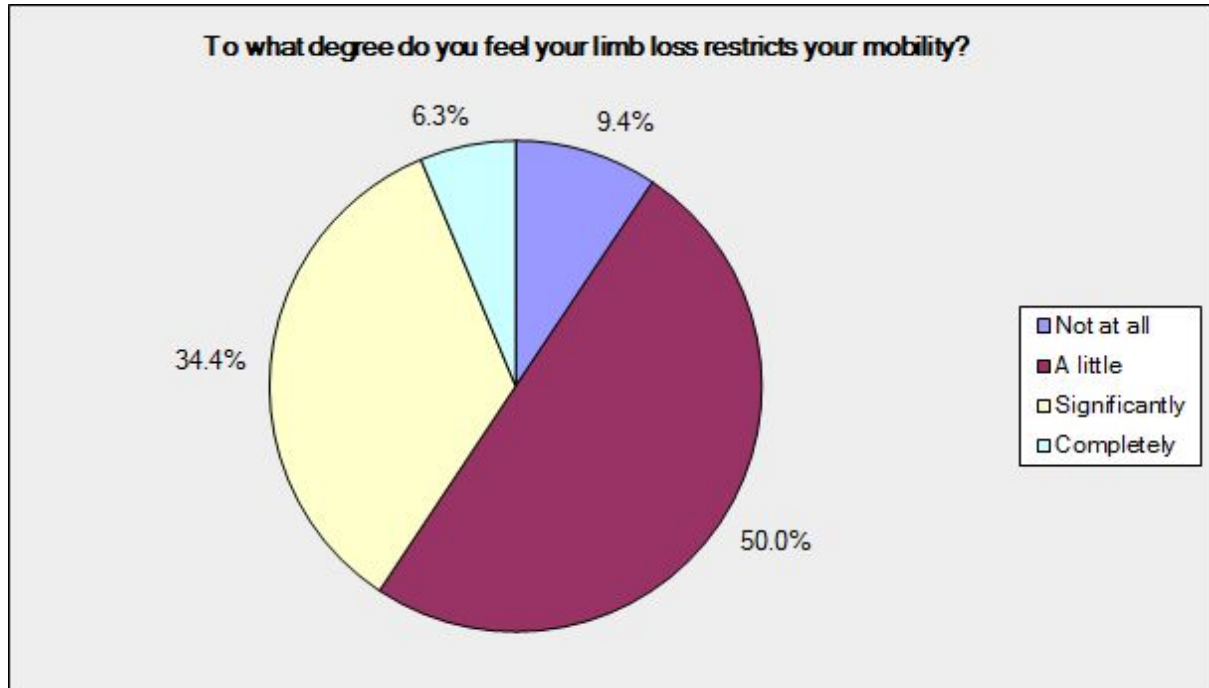
Respondents

#	Country	No. respondents
1	United States	20
2	UK	5
3	Cambodia	3
4	Australia	2
5	Canada	1
6	United Arab Emirates	1
	Total	32





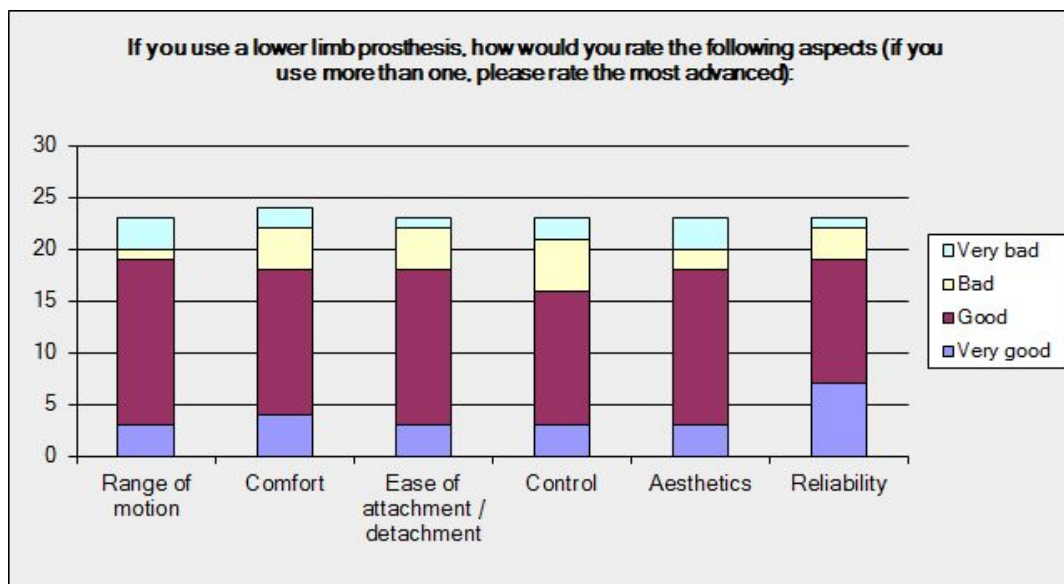
## Mobility impairment



## Satisfaction with existing prosthetics

**How satisfied are you with this AT?**

Answer Options	Very unsatisfied	Unsatisfied	Satisfied	Very satisfied	Response Count
Upper limb mechanical prosthesis	1	0	3	0	4
Upper limb electrical prosthesis	1	0	2	1	4
Lower limb mechanical prosthesis	2	3	7	2	14
Lower limb electrical prosthesis	0	1	2	1	4
Manual wheelchair	0	2	5	1	8
Powered wheelchair	0	1	1	1	3



**What do you think is the greater problem:**

