

KinArm[™] insight in motion

interactive robotics for basic
and clinical research on sensory,
motor and cognitive function

Kinarm.com

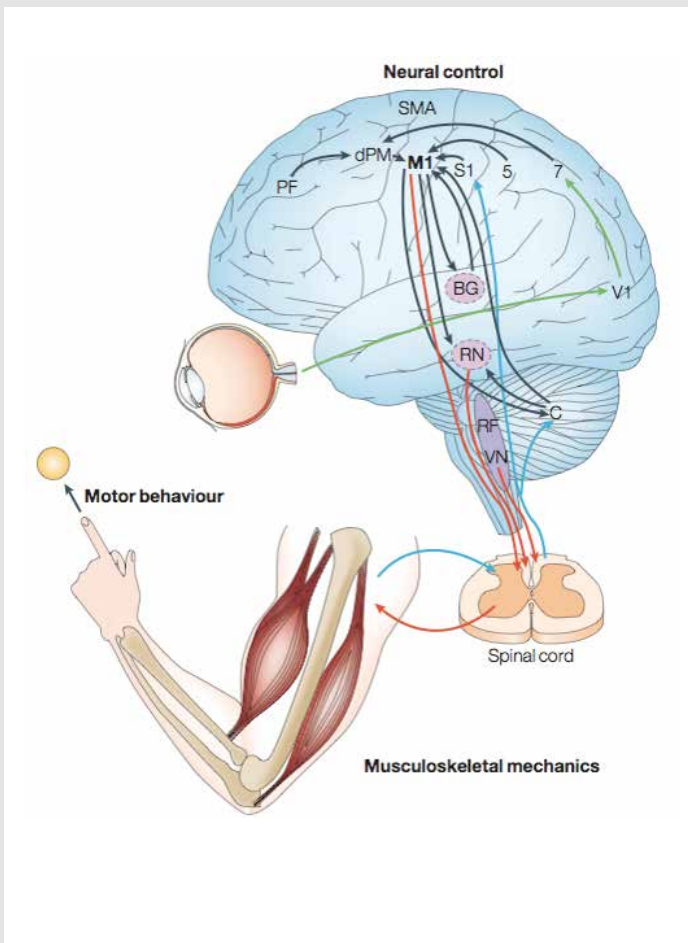


Kinarm experiments

For basic researchers, a Kinarm Lab provides the most flexible robotic platform for undertaking sensory, motor and cognitive research to study:

- Goal-directed motor actions
 - Motor learning and feedback processing through the application of mechanical loads or manipulation of the visual environment
 - Proprioceptive and cognitive processes
- ✓ Two interactive robotic platforms that can grow with your research program
 - ✓ 2-dimensional paradigm balancing complexity and simplicity
 - ✓ Integrated VR for natural visual and proprioceptive coupling
 - ✓ Optional integrated gaze-tracking
 - ✓ As a MathWorks Partnered product, rapidly implement your protocol with minimal programming experience

Create your behavioural paradigm flexibly and safely



Kinarm
End-Point Lab™



Kinarm
Exoskeleton Lab™



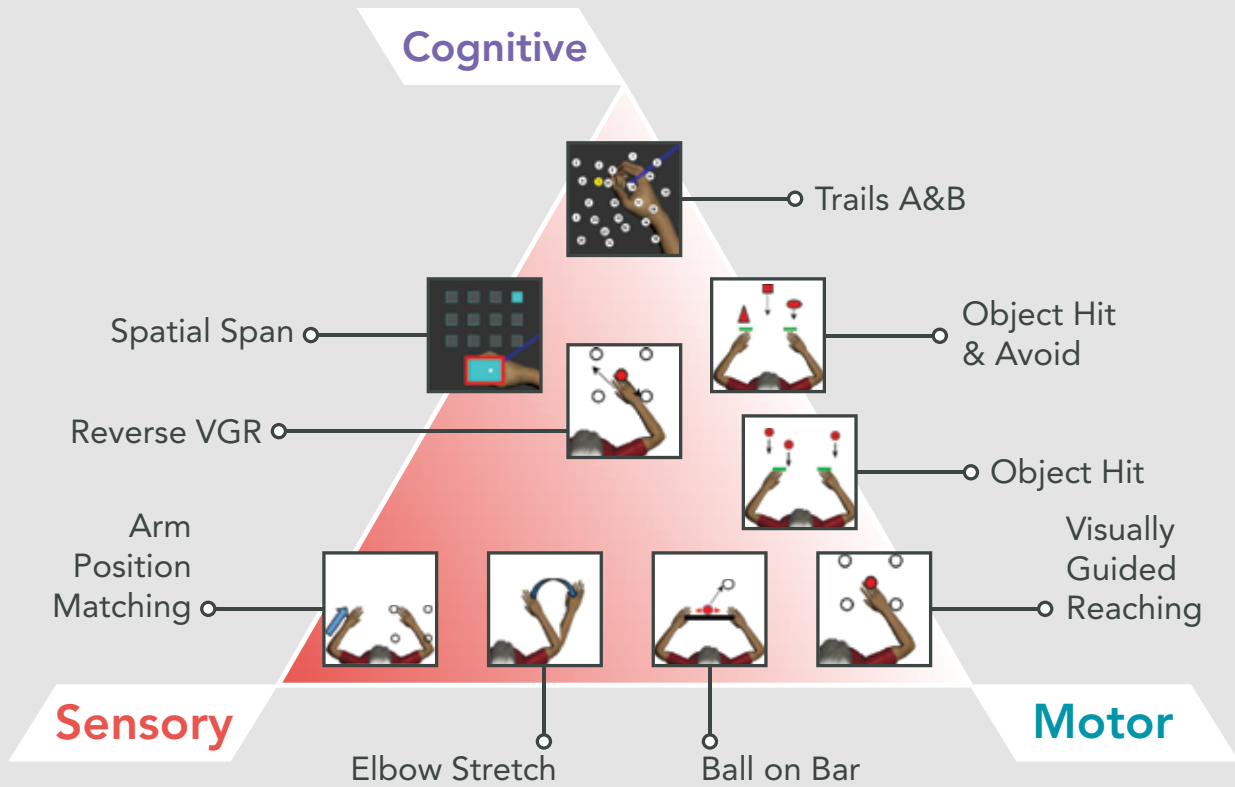
Photo: CSI, Calgary.

Kinarm measures

For clinical researchers, Kinarm Standard Tests™ provides a precise, quantitative profile of the underlying neurological impairments associated with any disease or injury.

- Broad-based brain function assessment in under an hour
- Sensory, motor and cognitive functions – all on one platform
- Instant analysis backed by large normative datasets
- Measure of meaningful change
- ✓ Continuous scales offering high resolution, and no floor and ceiling effects
- ✓ Supports patient impairment phenotyping to improve subject selection
- ✓ Ability to measure and discriminate subtle, but statistically significant changes in performance

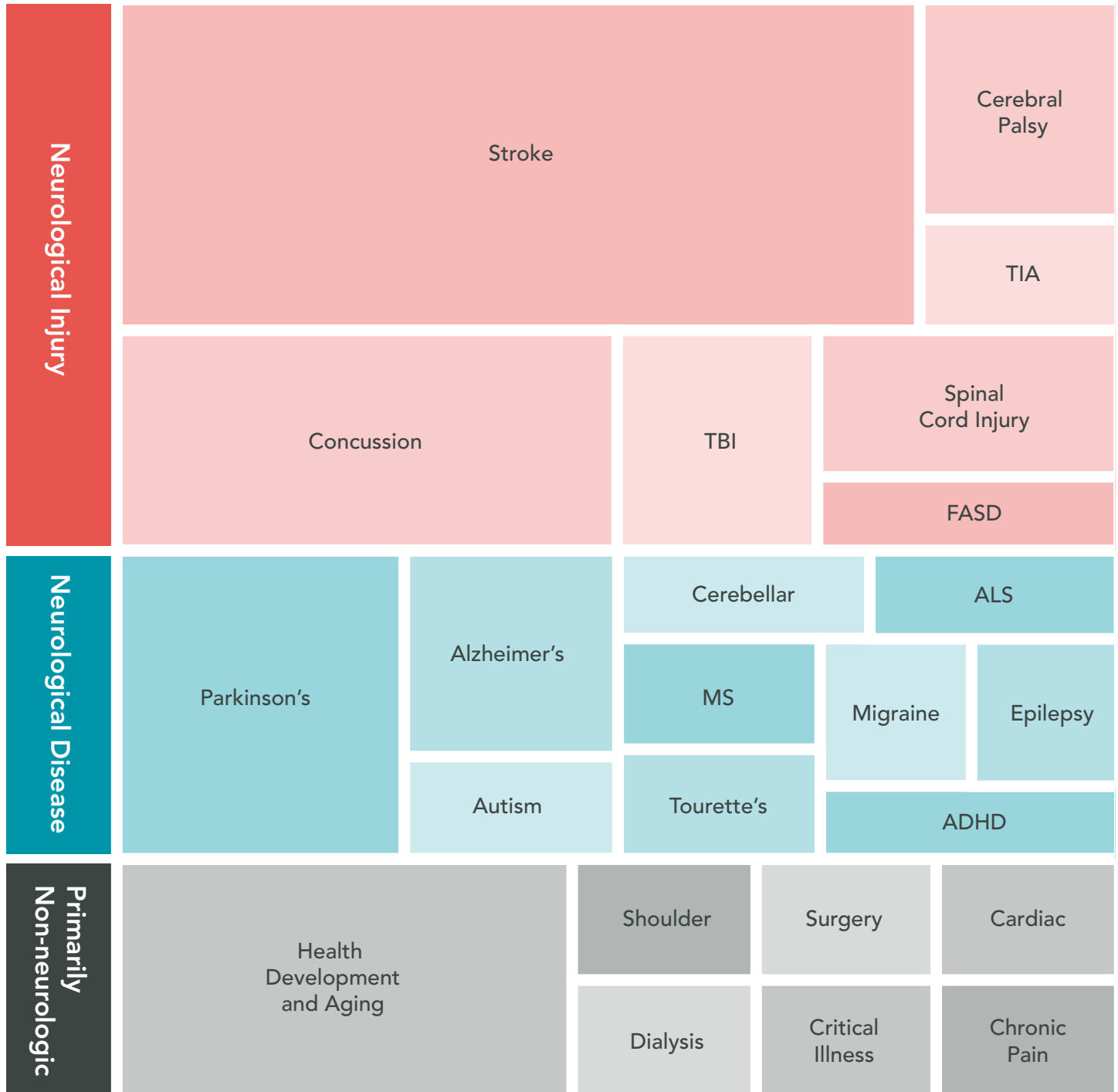
The sensitivity you need to evaluate new therapies for brain injury and disease.



Kinarm Standard Tests™		
Behavioural Task	Brain Function	Time
Arm Position Matching	<ul style="list-style-type: none"> Somatosensory processing for perception Position-sense 	2 min/ arm
Elbow Stretch Test	<ul style="list-style-type: none"> Assess presence of spasticity and high tone 	5 min/ arm
Visually Guided Reaching	<ul style="list-style-type: none"> Motor coordination Visuomotor skills Postural control of arm 	2 min/ arm
Ball on Bar	<ul style="list-style-type: none"> Bi-manual coordination Visuomotor skills 	3 min
Object Hit	<ul style="list-style-type: none"> Rapid visuomotor skills Bi-manual motor planning Spatial attention 	2.5 min
Object Hit & Avoid	<ul style="list-style-type: none"> Rapid motor decisions Bi-manual motor planning Spatial attention Executive function: attention and inhibitory control 	2.5 min
Reverse Visually Guided Reaching	<ul style="list-style-type: none"> Visuomotor skills Cognitive ability to override automatic motor responses 	3 min/ arm
Spatial Span	<ul style="list-style-type: none"> Visuospatial working memory 	4 min
Trails A&B	<ul style="list-style-type: none"> Executive function: task switching 	4 min

Kinarm collaborates




Kinarm labs are already being used by clinical researchers in over two dozen indications. Kinarm provides tools to assist with multi-site, multi-protocol, multi-user collaboration and clinical trials.



Kinarm trains

Training tasks, targeted at sensory motor deficits identified by Kinarm, are in development by University of Calgary & Queen's University.

Kinarm Platforms

	End-Point	Exoskeleton	NHP Exoskeleton
			
Subject Type	Human or NHP	Human	NHP
Robot Type	Hand-held/ End-effector	Exoskeleton	Exoskeleton
Uni/ Bimanual	Uni or Bimanual	Uni or Bimanual	Uni or Bimanual
Peak Torque/ Force	58 N	16.5 Nm (5.5 Nm cont.)	4 Nm at shoulder 3 Nm at elbow
Position Resolution	0.0006 deg (~3 microns)	0.0006 deg (~4 microns at hand)	0.0006 deg (~3 microns)
Planar Stiffness	~40,000 N/m	16,400 N/m end-point in-plane mechanical	19,500 N/m
End-Point Force/ Torque Sensor	Optional	Not Available	Not Available
Control System	Dexterit-E w optional KST	Dexterit-E w optional KST	Dexterit-E
Display Type	Vertical Display or Fixed or Variable Height Virtual Reality	Fixed Height Virtual Reality	Fixed Height Virtual Reality
Gaze-Tracking	Optional	Optional	Not Available