VAST.Rehab
REHABILITATION IN VIRTUAL REALITY

BASE PACK FOR LEAP MOTION

2021.4

WHAT IS NEEDED?

HARDWARE REQUIREMENTS

Please make sure the PC where you want this module to be active have VAST.Rehab Patient Panel installed and that the following hardware requirements are met:

- Windows 10
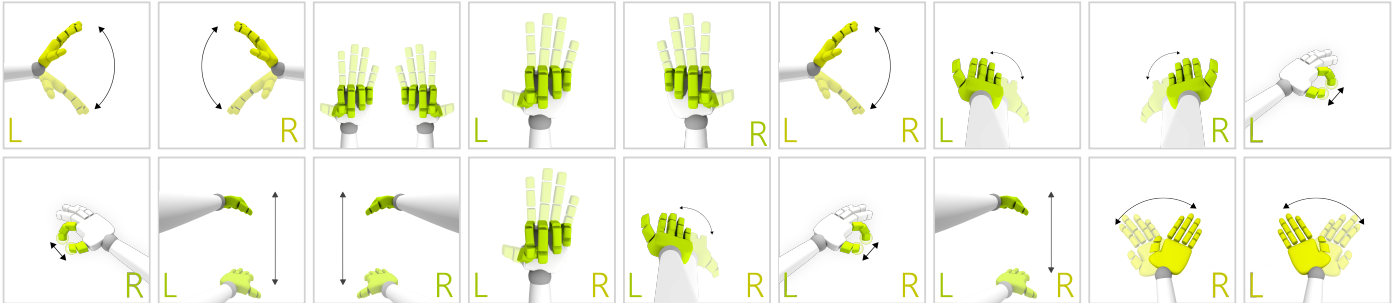- INTEL i5 processor
- 8GB RAM
- NVidia GeForce 1050

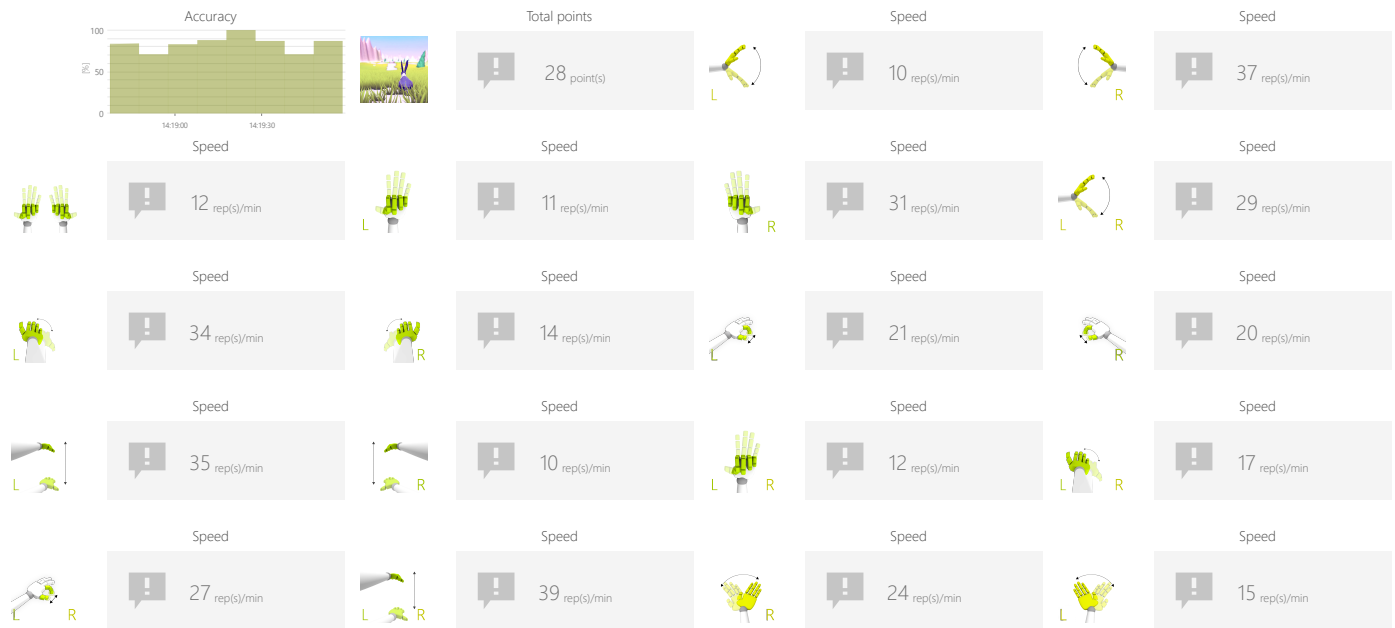**VAST.**Rehab
REHABILITATION IN VIRTUAL REALITY

SPEED
RABBIT

Measure number of repetitions of specific movement pattern an individual is able to perform within predefined time interval.

CONTROL MODES

RESULTS

Accuracy	**Total points** 28 point(s)	**Speed** 10 rep(s)/min L	**Speed** 37 rep(s)/min R
Speed 12 rep(s)/min	**Speed** 11 rep(s)/min L	**Speed** 31 rep(s)/min R	**Speed** 29 rep(s)/min L R
Speed 34 rep(s)/min L	**Speed** 14 rep(s)/min R	**Speed** 21 rep(s)/min L	**Speed** 20 rep(s)/min R
Speed 35 rep(s)/min L	**Speed** 10 rep(s)/min R	**Speed** 12 rep(s)/min L R	**Speed** 17 rep(s)/min
Speed 27 rep(s)/min L R	**Speed** 39 rep(s)/min L R	**Speed** 24 rep(s)/min R	**Speed** 15 rep(s)/min L

ADJUSTMENTS

• Task duration
• Range

OBJECTIVES

• Speed of movement
• Repetitive movements

INSTRUCTION FOR PATIENT

Go through the entire route as fast as you can

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REHABILITATION IN VIRTUAL REALITY

SPEED
RABBIT

SAMPLE SETTINGS

6

Duration

90s

Range

0% ‹—› 100%
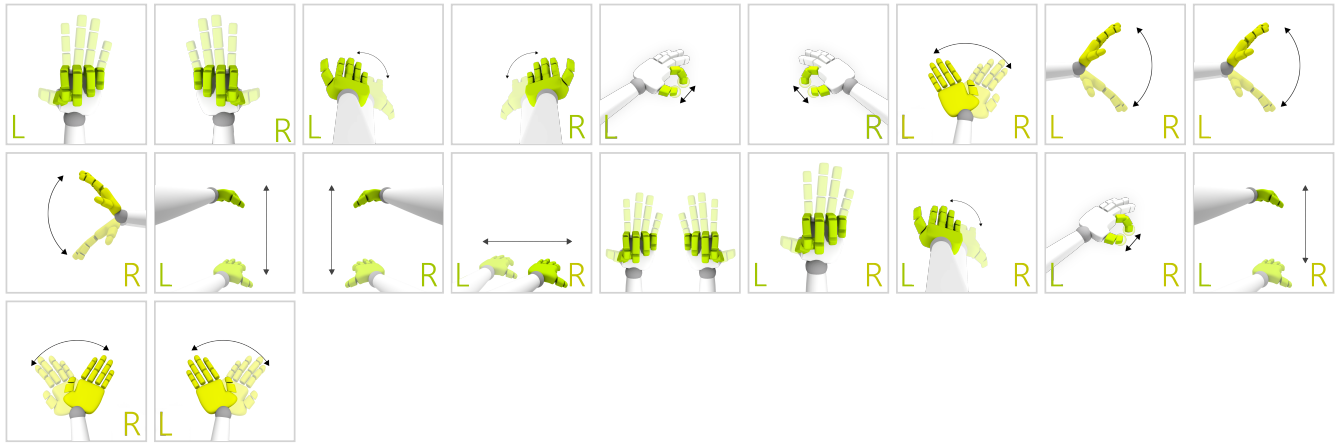
L
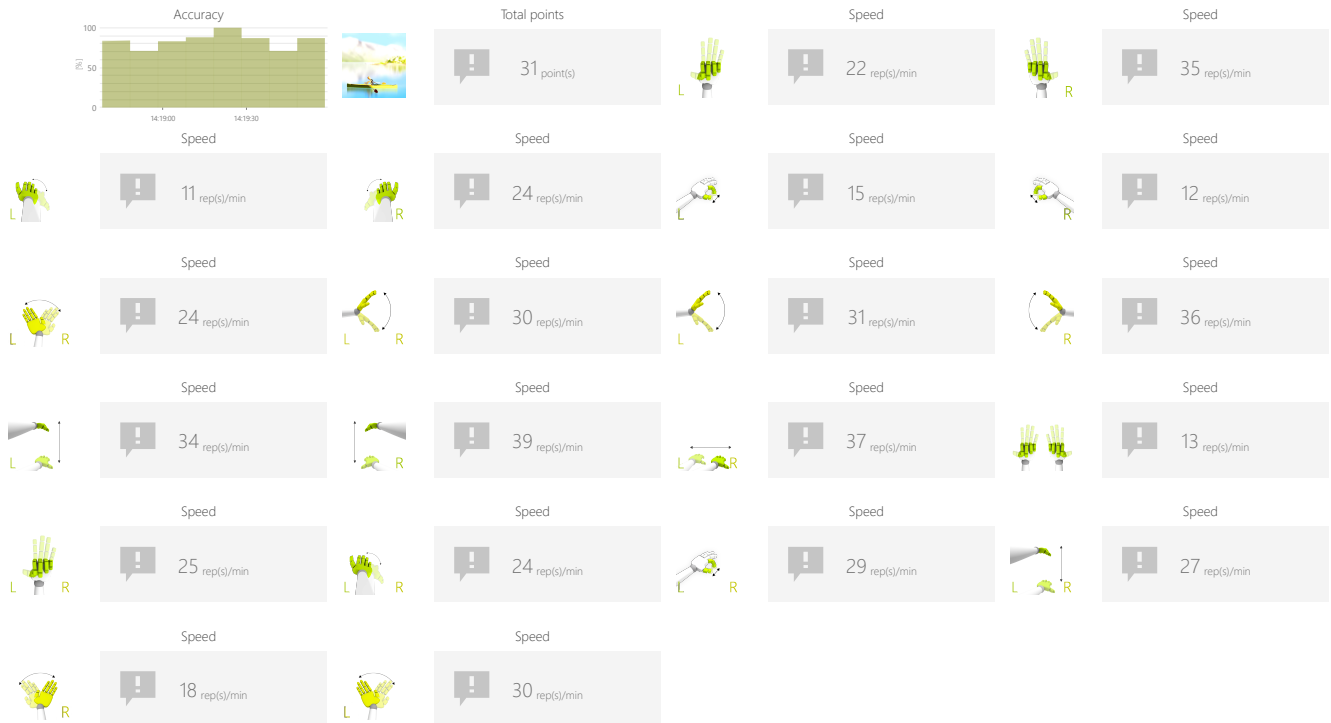
L

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REHABILITATION IN VIRTUAL REALITY

SPEED
KAYAK

Measure number of repetitions of specific movement pattern an individual is able to perform within predefined time interval.

CONTROL MODES

RESULTS

Accuracy	Total points	Speed	Speed
	31 point(s)	22 rep(s)/min	35 rep(s)/min

Speed	Speed	Speed	Speed
11 rep(s)/min	24 rep(s)/min	15 rep(s)/min	12 rep(s)/min

Speed	Speed	Speed	Speed
24 rep(s)/min	30 rep(s)/min	31 rep(s)/min	36 rep(s)/min

Speed	Speed	Speed	Speed
34 rep(s)/min	39 rep(s)/min	37 rep(s)/min	13 rep(s)/min

Speed	Speed	Speed	Speed
25 rep(s)/min	24 rep(s)/min	29 rep(s)/min	27 rep(s)/min

Speed	Speed		
18 rep(s)/min	30 rep(s)/min		

ADJUSTMENTS

• Task duration

• Range

OBJECTIVES

• Speed of movement
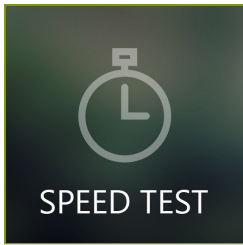
• Repetitive movements

INSTRUCTION FOR PATIENT

Row as fast as you can

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REHABILITATION IN VIRTUAL REALITY

SPEED
KAYAK

SAMPLE SETTINGS

Duration

90s

Range

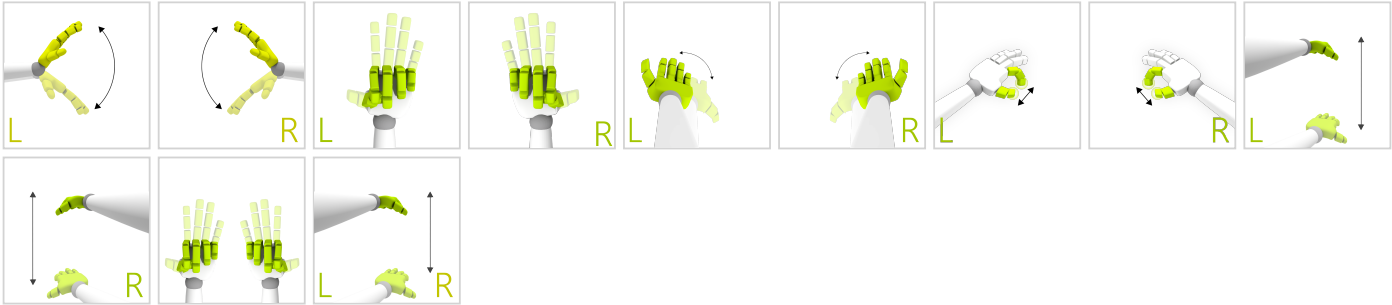80%

20%

L

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REHABILITATION IN VIRTUAL REALITY

SPEED
SPEED TEST

Measure number of repetitions of specific movement pattern an individual is able to perform within predefined time interval.

CONTROL MODES

RESULTS

	Speed		Speed
L !	13 rep(s)/min	R !	25 rep(s)/min

	Speed		Speed
L !	15 rep(s)/min	R !	27 rep(s)/min

	Speed		Speed
L !	32 rep(s)/min	R !	14 rep(s)/min

	Speed		Speed
L !	28 rep(s)/min	R !	33 rep(s)/min

	Speed		Speed
L !	31 rep(s)/min	R !	22 rep(s)/min

	Speed		Speed
L !	21 rep(s)/min	L R !	28 rep(s)/min

ADJUSTMENTS

• Time to complete action

• Range

OBJECTIVES

• Speed of movement

• Repetitive movements

INSTRUCTION FOR PATIENT

Perform the specified movement pattern as many times as possible

VAST.Rehab
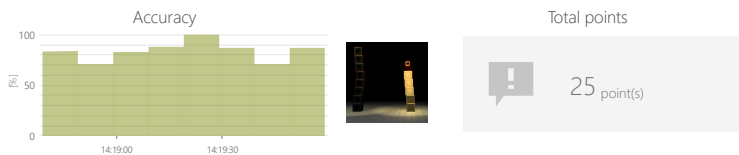REHABILITATION IN VIRTUAL REALITY
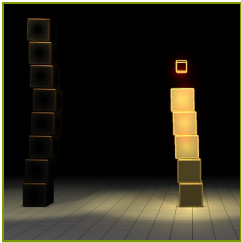
BALANCE
BLOCK BUILDER

Measure and train individual's skills to perform specific movement patterns while keeping predefined weight distribution.

CONTROL MODES

RESULTS

Accuracy

Total points

! 25 point(s)

OBJECTIVES

• Movement precision
• Muscle strengthening
• Balance and equilibrium training

INSTRUCTION FOR PATIENT
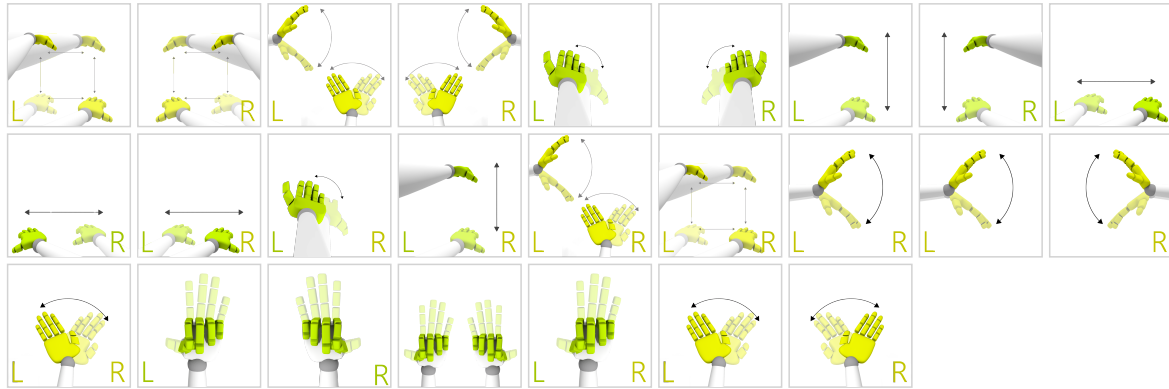
Build as many stacks as you can. Keep your body balanced.

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REHABILITATION IN VIRTUAL REALITY

MOVEMENT PRECISION
FISH

Measure and train individual's skills to perform specific movement patterns with predefined speed and range.

CONTROL MODES

RESULTS

Accuracy	Total points	Movement precision	Movement precision
	35 point(s)	27 %	37 %
Movement precision	Movement precision	Movement precision	Movement precision
23 %	13 %	14 %	39 %
Movement precision	Movement precision	Movement precision	Movement precision
26 %	21 %	26 %	21 %
Movement precision	Movement precision	Movement precision	Movement precision
23 %	39 %	20 %	24 %
Movement precision	Movement precision	Movement precision	Movement precision
35 %	37 %	32 %	19 %
Movement precision	Movement precision	Movement precision	Movement precision
14 %	30 %	33 %	28 %
Movement precision	Movement precision	Movement precision	
33 %	14 %	33 %	

ADJUSTMENTS

- Task duration
- Movement mode
- Range
- Route shape
- Speed of objects

OBJECTIVES

- 3D space movements reproduction
- Planned movements
- Muscle strengthening
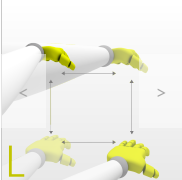- Movement precision
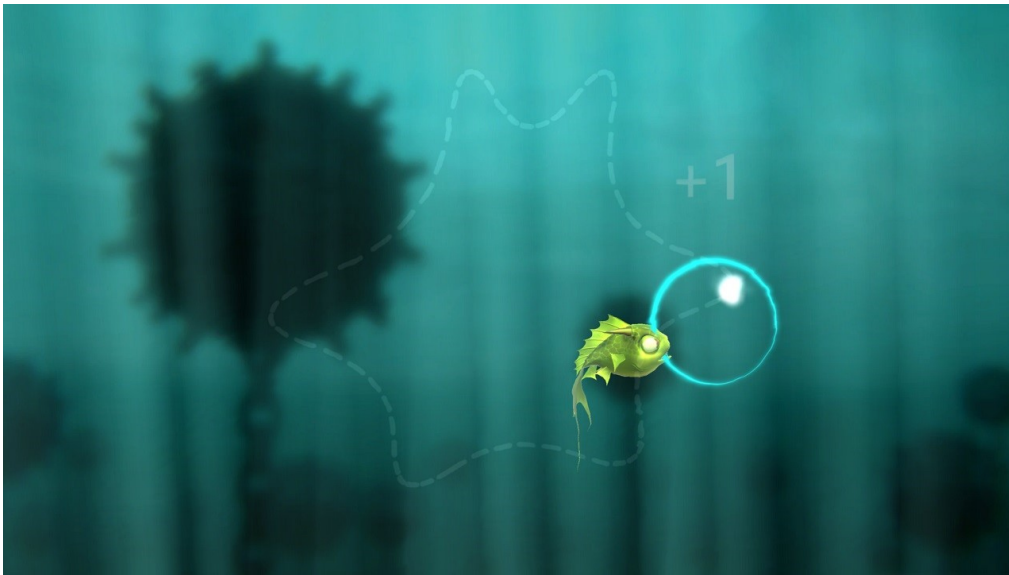- Visual motor coordination

INSTRUCTION FOR PATIENT

Move the blue circle to protect the sparks source from the fish. When the sparks source is inside the circle it is safe
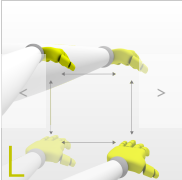
VAST.Rehab
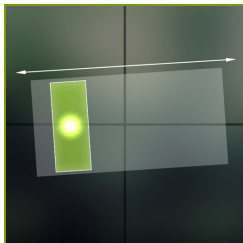REHABILITATION IN VIRTUAL REALITY

MOVEMENT PRECISION
FISH

SAMPLE SETTINGS

Difficulty	**Custom**

Duration	Movement mode
90s	Left

Range	Route shape
100% / 0% / 0% ↔ 100%	(circle)

Speed of objects
100%

+1

Difficulty	**1/3**

Duration	Movement mode
90s	Left

Range	Route shape
100% / 0% / 0% ↔ 100%	(irregular shape)

Speed of objects
100%

VAST.Rehab
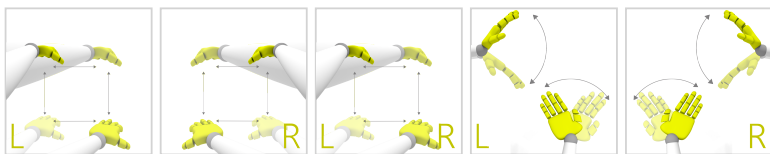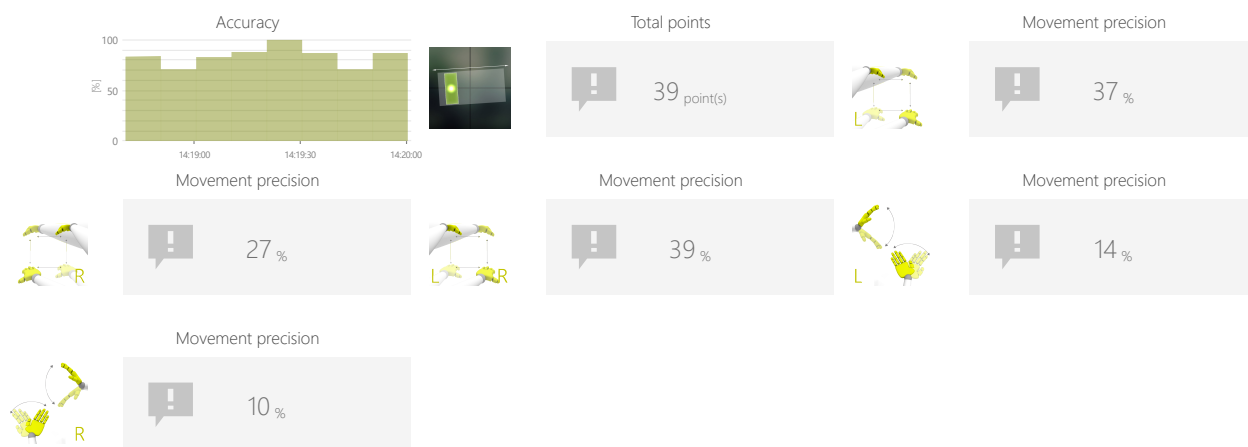REHABILITATION IN VIRTUAL REALITY

MOVEMENT PRECISION
PENDULUM

Measure and train individual's skills to perform specific movement patterns with predefined speed and range.

CONTROL MODES

RESULTS

Accuracy

Total points	Movement precision
! 39 point(s)	! 37 %

Movement precision	Movement precision	Movement precision
! 27 %	! 39 %	! 14 %

Movement precision

! 10 %

ADJUSTMENTS

• Task duration
• Range
• Show path
• Period
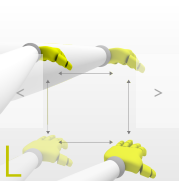• Rotation
• Pendulum height
• Pendulum width

OBJECTIVES

• 3D space movements reproduction
• Balance and equilibrium training
• Rhythmicity
• Activity in a given rhythm
• Movement precision

INSTRUCTION FOR PATIENT

Try to synchronize yourself with the rectangle movements. Do your best to stay within the rectangle

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REHABILITATION IN VIRTUAL REALITY

MOVEMENT PRECISION
PENDULUM

SAMPLE SETTINGS

Difficulty
1/2

Duration
90s

Range
100%
0%
0% ↔ 100%

Show path
No

Period
5s

Rotation
0

Pendulum height
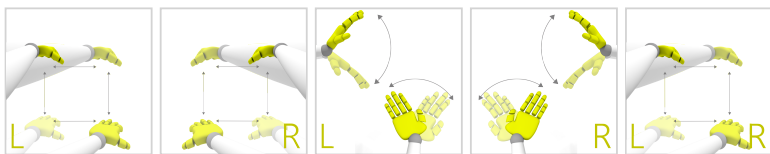50%

Pendulum width
100%

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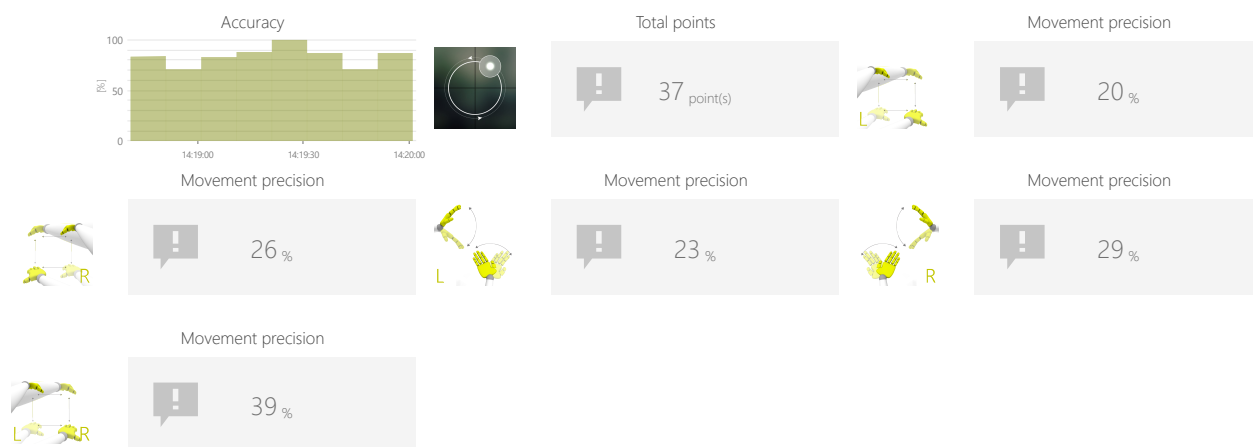REHABILITATION IN VIRTUAL REALITY
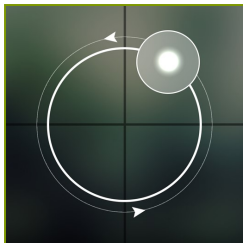
MOVEMENT PRECISION
TRACKING

Measure and train individual's skills to perform specific movement patterns with predefined speed and range.

CONTROL MODES

RESULTS

Accuracy

Total points

37 point(s)

Movement precision

20 %

Movement precision

26 %

Movement precision

23 %

Movement precision

29 %

Movement precision

39 %

ADJUSTMENTS

• Task duration
• Range
• Inverse direction
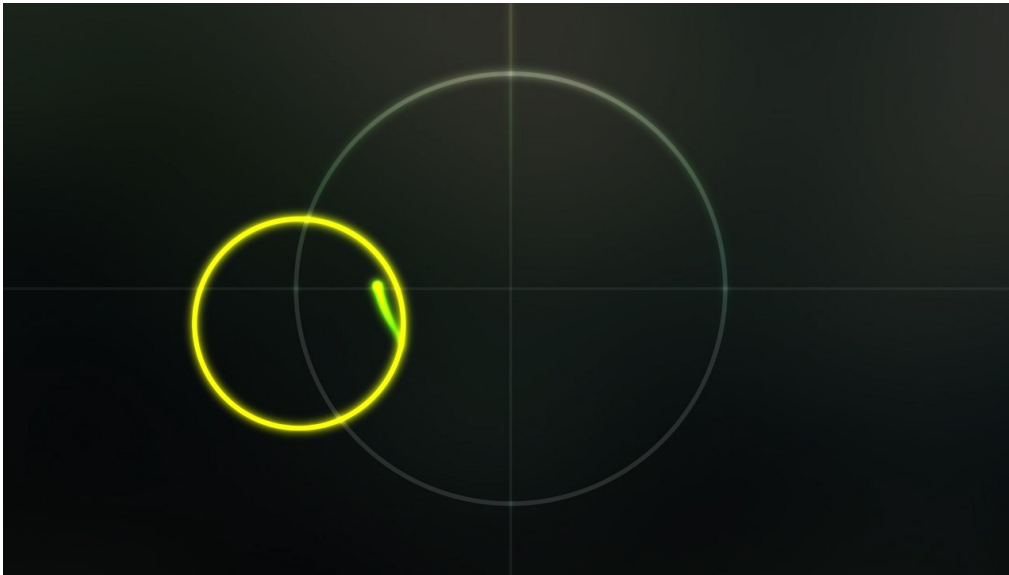• Show path
• Period
• Radius
• Target radius

OBJECTIVES

• 3D space movements reproduction
• Balance and equilibrium training
• Test the limits of balance and equilibrium
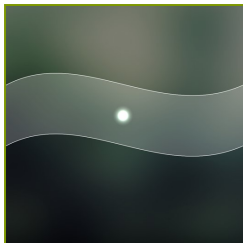
INSTRUCTION FOR PATIENT

Try to synchronize yourself with the circle movements. Do your best to stay within the circle

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REHABILITATION IN VIRTUAL REALITY

MOVEMENT PRECISION
TRACKING

SAMPLE SETTINGS

16

Duration
90s

Range
100%
0%
0% ↔ 100%

Inverse direction
No

Show path
No

Period
10s

Radius
75%

Target radius
75%

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REHABILITATION IN VIRTUAL REALITY

MOVEMENT PRECISION
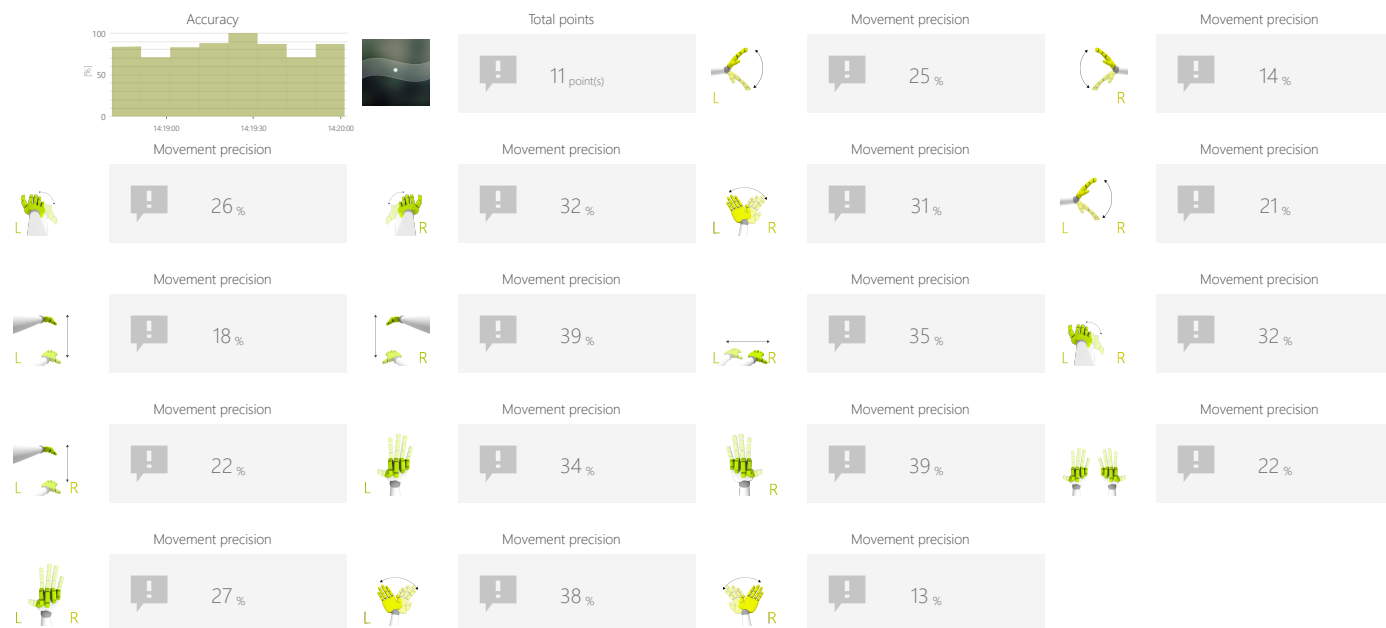## GRAPH

Measure and train individual's skills to perform specific movement patterns with predefined speed and range.

CONTROL MODES

RESULTS

Accuracy	Total points	Movement precision	Movement precision
	11 point(s)	25 %	14 %
Movement precision	Movement precision	Movement precision	Movement precision
26 %	32 %	31 %	21 %
Movement precision	Movement precision	Movement precision	Movement precision
18 %	39 %	35 %	32 %
Movement precision	Movement precision	Movement precision	Movement precision
22 %	34 %	39 %	22 %
Movement precision	Movement precision	Movement precision	
27 %	38 %	13 %	
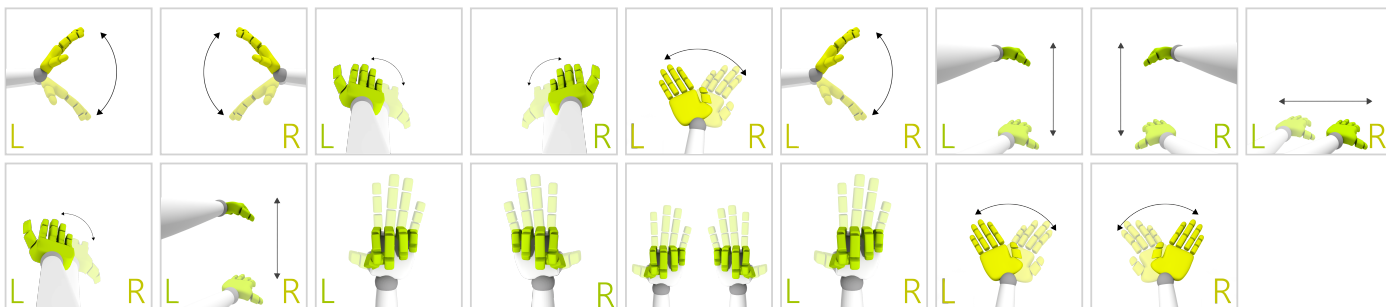
ADJUSTMENTS

• Graph shape (sinus or square, amplitude, border, etc.)

• Task duration

• Range

OBJECTIVES

• Movement precision

• Activity in a given rhythm

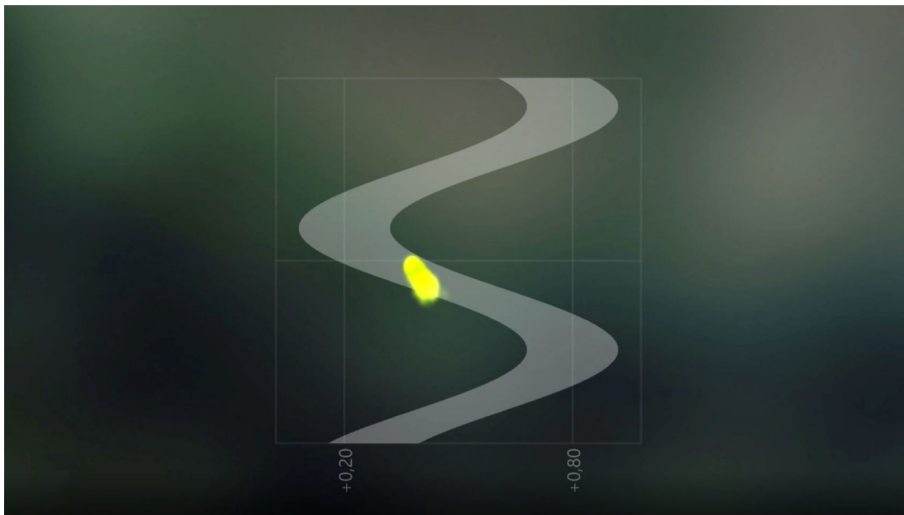• Repetitive movements

• Hands raising

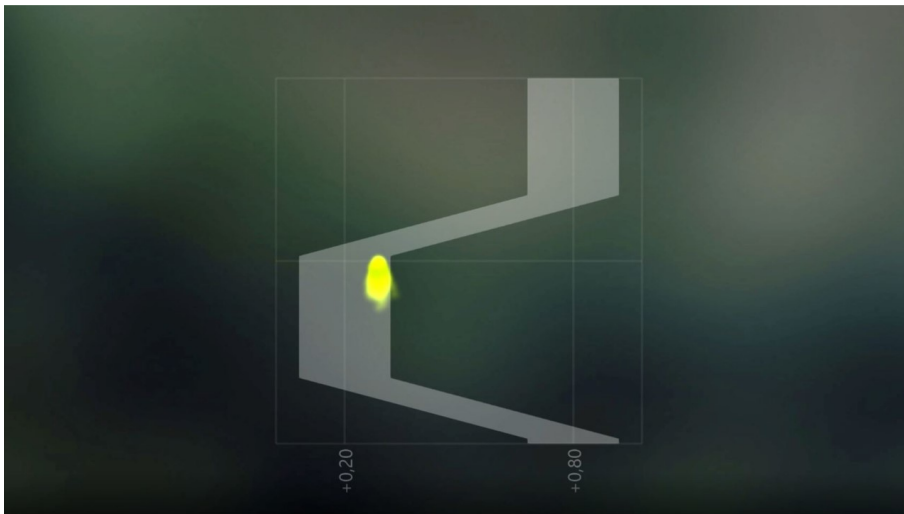## INSTRUCTION FOR PATIENT

Try to stay within the borders

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REHABILITATION IN VIRTUAL REALITY

MOVEMENT PRECISION
GRAPH

SAMPLE SETTINGS

Difficulty
3/3

Graph configuration

⟲ : 4.0s   ↤|↦ : 20%

Duration
30s

Range
L
80% ⟷ 20%

Difficulty
1/3

Graph configuration

⟲ : 4.0s   ↤|↦ : 40%

Duration
90s

Range
100%
0%
L
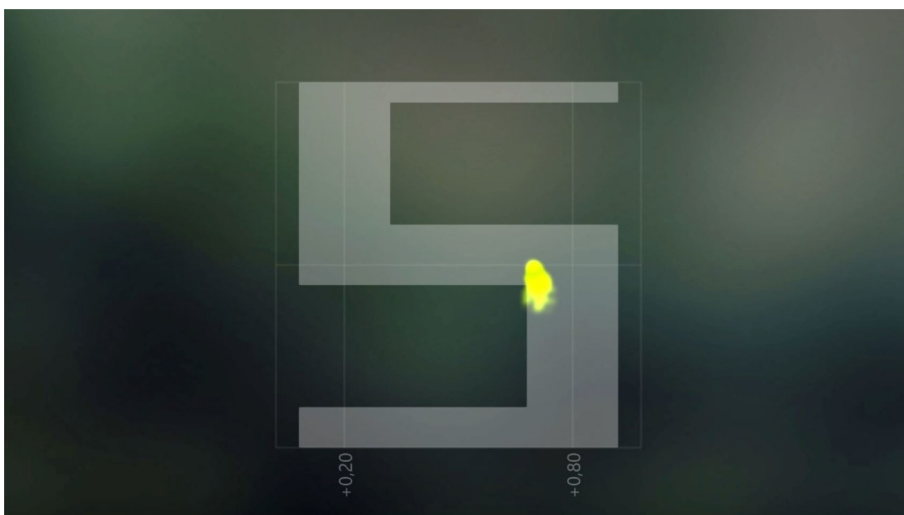
Difficulty
Custom

Graph configuration

↤|↦ : 20%   ↑ : 2.0s   ↓ : 2.0s   ↗ : 1.0s   ↘ : 1.0s
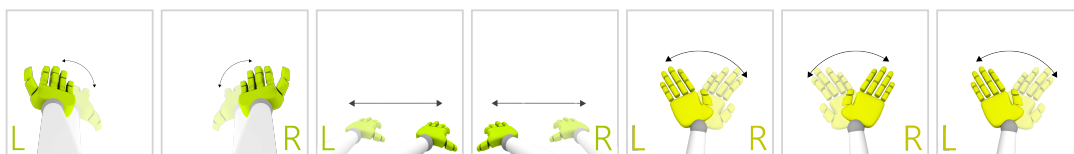
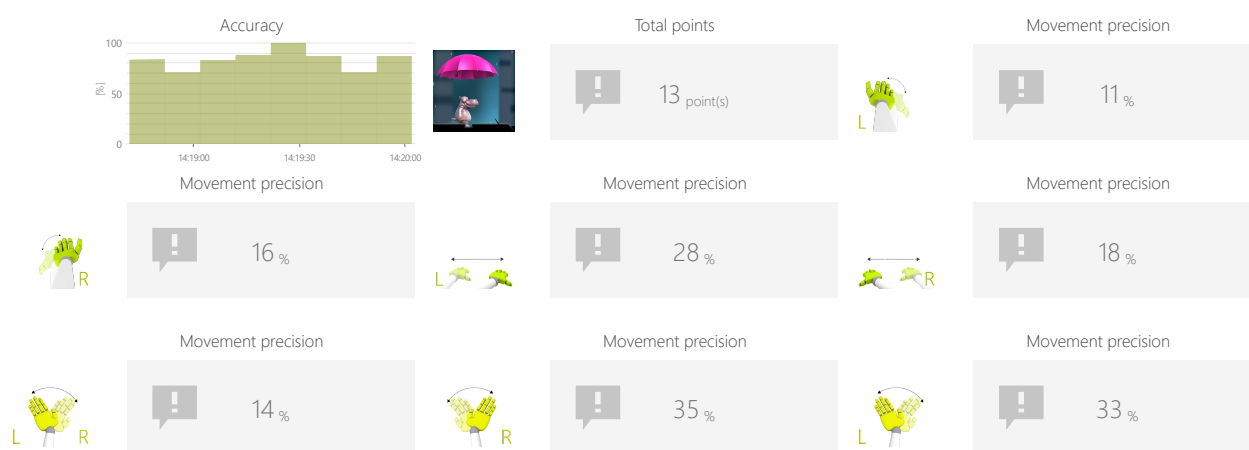Duration
30s

Range
L
80% ⟷ 20%

MOVEMENT PRECISION
UMBRELLA

Measure and train individual's skills to perform specific movement patterns with predefined speed and range.

CONTROL MODES

RESULTS

Accuracy

Total points

13 point(s)

Movement precision

11 %

Movement precision

16 %

Movement precision

28 %

Movement precision

18 %

Movement precision

14 %

Movement precision

35 %

Movement precision

33 %

ADJUSTMENTS

• Task duration
• Path
• Range
• Umbrella size

OBJECTIVES

• Movement precision
• Visual motor coordination

INSTRUCTION FOR PATIENT

Don't let the hippo get wet - keep the umbrella above him!

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REHABILITATION IN VIRTUAL REALITY

MOVEMENT PRECISION
UMBRELLA

SAMPLE SETTINGS

Difficulty
1/3

Duration	Path
60s	⏱ : 8.0s

Range	Umbrella size
L 80% ⟷ 20%	150%

VAST. Rehab
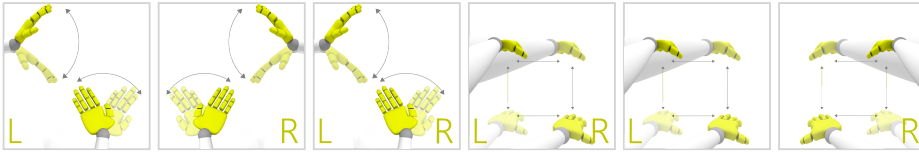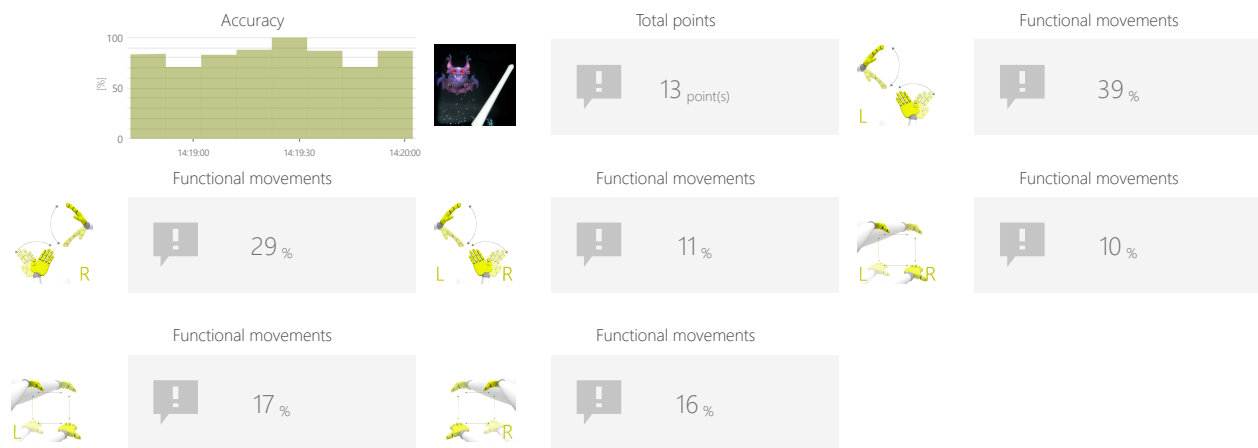REHABILITATION IN VIRTUAL REALITY

FUNCTIONAL MOVEMENTS
VAMPIRES

Measure and train individual's skills to perform movements based on real-world situational biomechanics. They usually involve multi-planar, multi-joint movements which place demand on the body's core musculature and innervation.

CONTROL MODES

RESULTS

Accuracy	Total points	Functional movements
	13 point(s)	39 %

Functional movements	Functional movements	Functional movements
29 %	11 %	10 %

Functional movements	Functional movements
17 %	16 %

ADJUSTMENTS

• Positions to have targets on
• Task duration
• Range
• Time between objects
• Time to react

OBJECTIVES

• Visual motor coordination
• Exercise with or without support from healthy limb
• Spontaneous movements in 3D space
• Speed of movement

INSTRUCTION FOR PATIENT

Use your sword to knock down flying vampires who want to bite you!

VAST.Rehab
REHABILITATION IN VIRTUAL REALITY

FUNCTIONAL MOVEMENTS
VAMPIRES

SAMPLE SETTINGS

Difficulty 1/3

Active positions	Duration
	90s

Range	Time between objects
0% – 100%	2s
0% ↔ 100%	Time to react 2s

Difficulty 1/3

Active positions	Duration
	90s

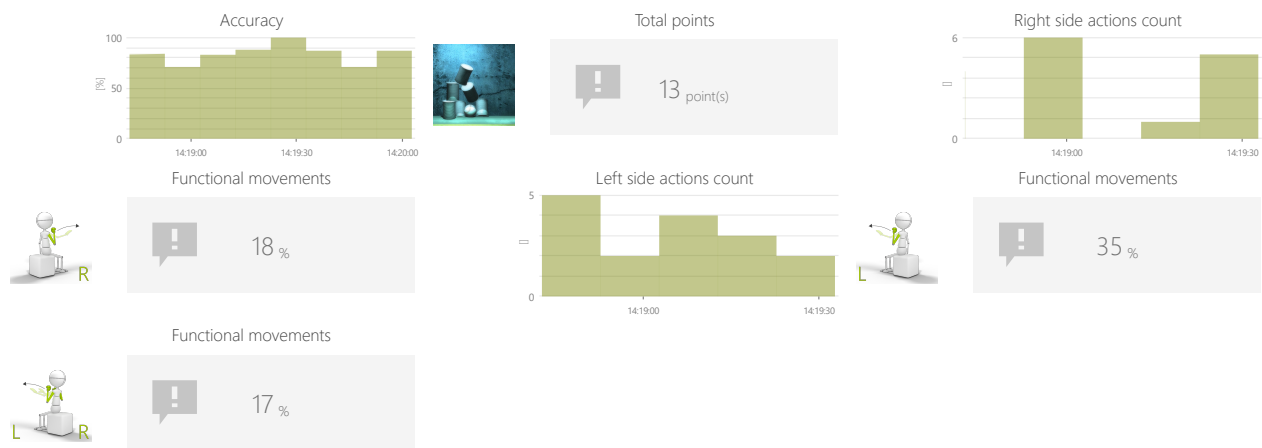| Range	Time between objects
0% – 100%	2s
0% ↔ 100%	Time to react 2s

FUNCTIONAL MOVEMENTS
CANS

Measure and train individual's skills to perform movements based on real-world situational biomechanics. They usually involve multi-planar, multi-joint movements which place demand on the body's core musculature and innervation.

CONTROL MODES

RESULTS

Accuracy

Total points

13 point(s)

Right side actions count

Functional movements

18 %

Left side actions count

Functional movements

35 %

Functional movements

17 %

ADJUSTMENTS

• Task duration
• Speed of objects
• Weight of targets

OBJECTIVES

• Movement precision
• Predicting the trajectory of objects in 3D space
• Dynamics of planned movements
• Dynamic responses to emerging moving targets
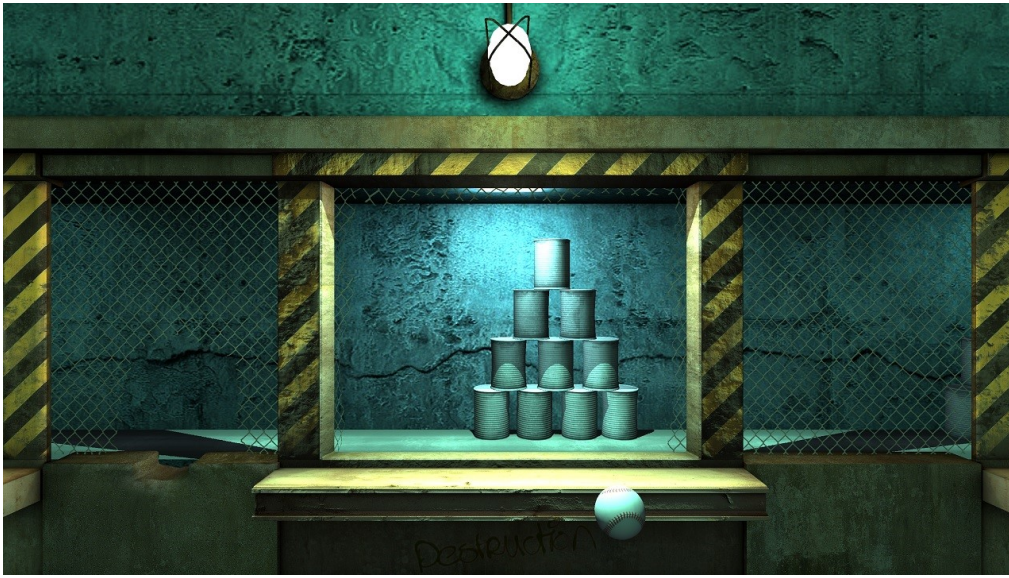• The ability of spatial visualization

INSTRUCTION FOR PATIENT

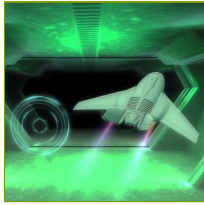Throw the balls to strike as many cans as you can

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REHABILITATION IN VIRTUAL REALITY

FUNCTIONAL MOVEMENTS
CANS

SAMPLE SETTINGS

Difficulty
1/4

Duration
90s

Speed of objects
75%

Weight of targets
100%

R

VAST.Rehab
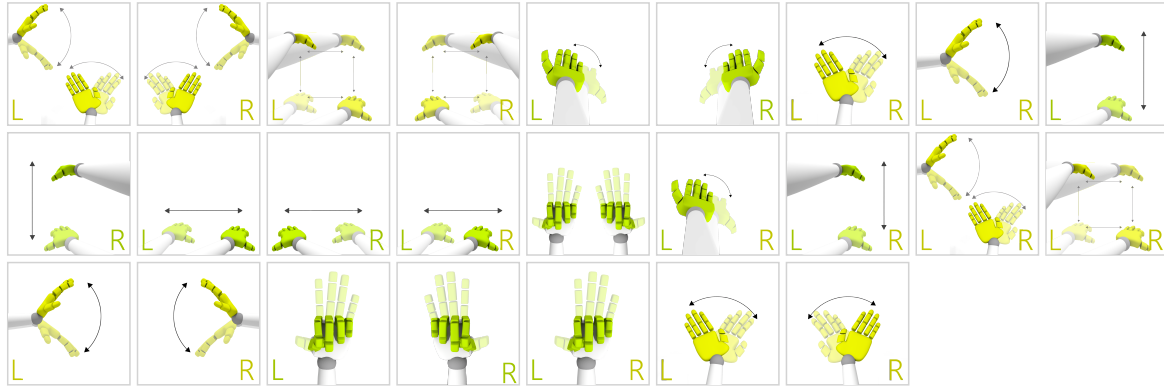REHABILITATION IN VIRTUAL REALITY
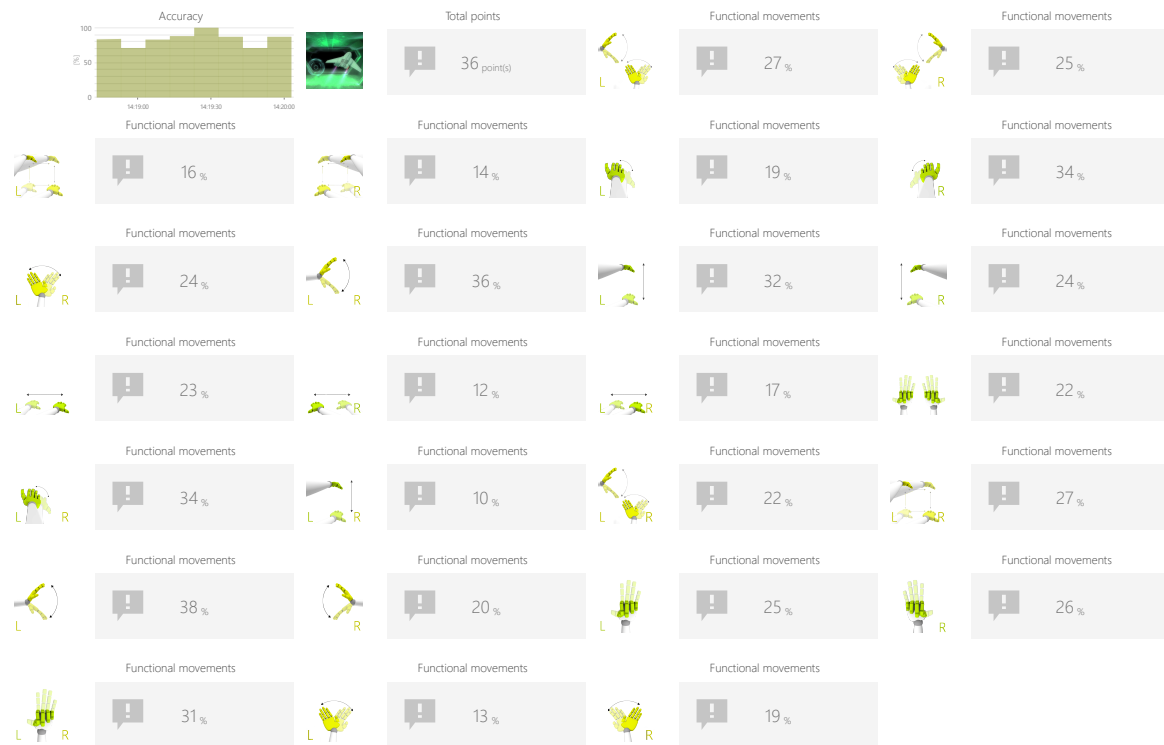
FUNCTIONAL MOVEMENTS
AIRPLANE

Measure and train individual's skills to perform movements based on real-world situational biomechanics. They usually involve multi-planar, multi-joint movements which place demand on the body's core musculature and innervation.

CONTROL MODES

RESULTS

Accuracy	
Total points	36 point(s)
Functional movements	27 %
Functional movements	25 %
Functional movements	16 %
Functional movements	14 %
Functional movements	19 %
Functional movements	34 %
Functional movements	24 %
Functional movements	36 %
Functional movements	32 %
Functional movements	24 %
Functional movements	23 %
Functional movements	12 %
Functional movements	17 %
Functional movements	22 %
Functional movements	34 %
Functional movements	10 %
Functional movements	22 %
Functional movements	27 %
Functional movements	38 %
Functional movements	20 %
Functional movements	25 %
Functional movements	26 %
Functional movements	31 %
Functional movements	13 %
Functional movements	19 %

ADJUSTMENTS

• Task duration
• Range
• Player speed

OBJECTIVES

• Focusing
• Perceptivity
• Movement precision
• Predicting the trajectory of objects in 3D space
• Balance and equilibrium training

INSTRUCTION FOR PATIENT

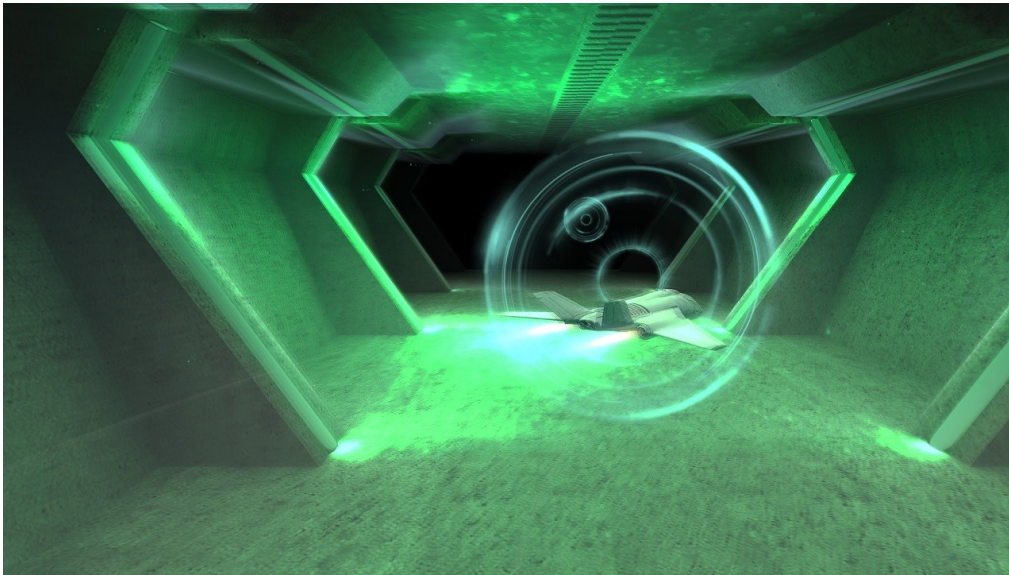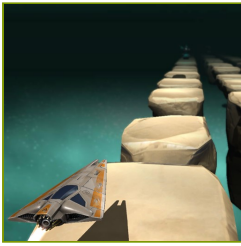Make the airplane fly through the circles. The closer to the center it flies the more points you get

VAST.Rehab
REHABILITATION IN VIRTUAL REALITY

FUNCTIONAL MOVEMENTS
AIRPLANE

SAMPLE SETTINGS

Difficulty
2/4

Duration
90s

Range
L
80% ↔ 20%

Player speed
100%

VAST.Rehab
REHABILITATION IN VIRTUAL REALITY
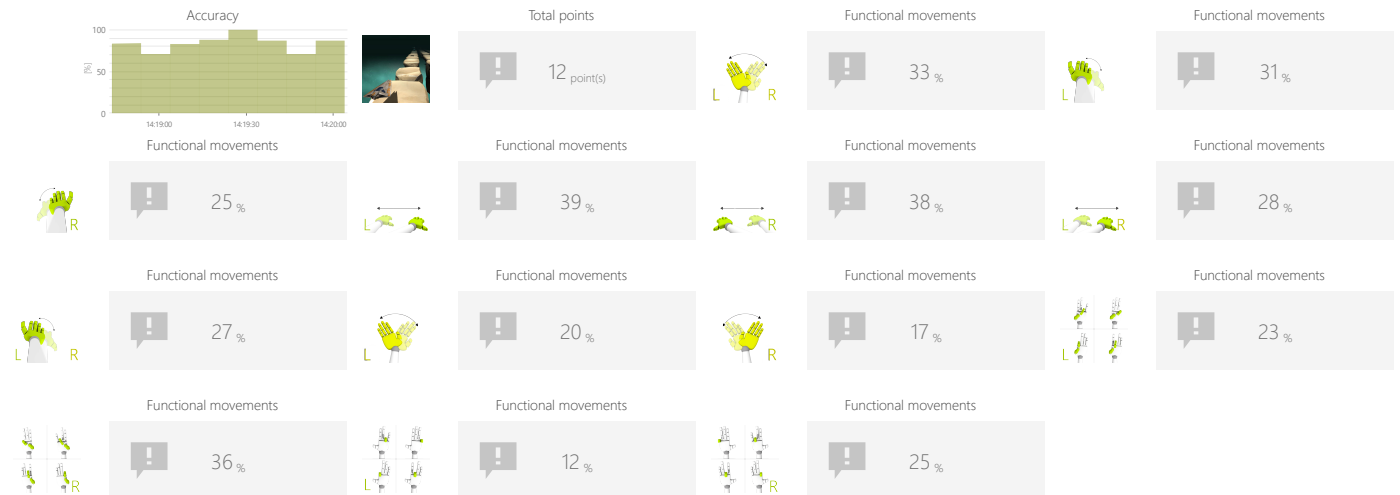
FUNCTIONAL MOVEMENTS
STONES

Measure and train individual's skills to perform movements based on real-world situational biomechanics. They usually involve multi-planar, multi-joint movements which place demand on the body's core musculature and innervation.

CONTROL MODES

RESULTS

Accuracy	Total points	Functional movements
	12 point(s)	33 %
Functional movements	Functional movements	Functional movements
31 %	25 %	39 %
38 %	28 %	27 %
20 %	17 %	23 %
36 %	12 %	25 %

ADJUSTMENTS

• Task duration

• Range

• Player speed

OBJECTIVES

• Perceptivity

• Dynamics of planned movements

• Reaction to the positive visual stimuli

• Response to negative visual stimuli

INSTRUCTION FOR PATIENT

Make the the spaceship collect the colorful creatures and avoid the rocks

VAST.Rehab
REHABILITATION IN VIRTUAL REALITY

FUNCTIONAL MOVEMENTS
STONES

SAMPLE SETTINGS

Difficulty
1/3

Duration
90s

Range
L R
0% ⟷ 100%

Player speed
100%

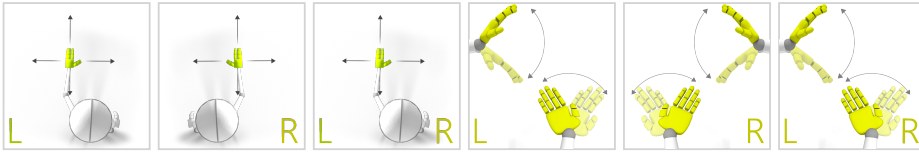VAST.Rehab
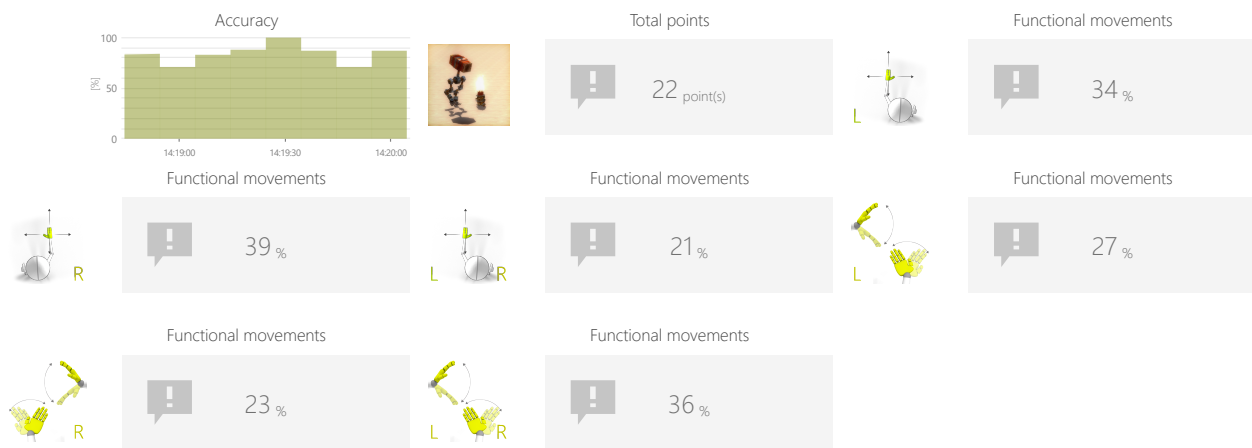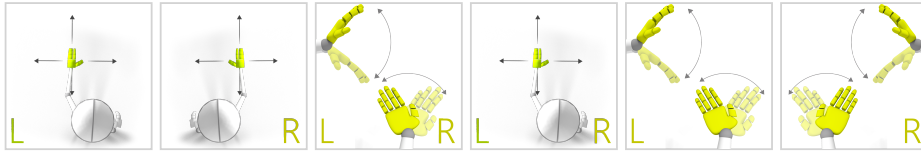REHABILITATION IN VIRTUAL REALITY

FUNCTIONAL MOVEMENTS
HAMMER

Measure and train individual's skills to perform movements based on real-world situational biomechanics. They usually involve multi-planar, multi-joint movements which place demand on the body's core musculature and innervation.

CONTROL MODES

RESULTS

Accuracy	Total points	Functional movements
	22 point(s)	34 %
Functional movements	Functional movements	Functional movements
39 %	21 %	27 %
Functional movements	Functional movements	
23 %	36 %	

ADJUSTMENTS

• Positions to have targets on
• Task duration
• Range
• Time to react
• Reticle size

OBJECTIVES

• Planning and Strategy
• Sideways walking
• Balance and equilibrium training
• Speed of decision making

INSTRUCTION FOR PATIENT

Hit the burning barrels as quickly as you can. Then return to the center

VAST.Rehab
REHABILITATION IN VIRTUAL REALITY

FUNCTIONAL MOVEMENTS
HAMMER

SAMPLE SETTINGS

	Difficulty	
◀	**1/3**	▶

Active positions	Duration
	< >
	90s

Range	Time to react
100% 0%	< >
L	10s
0% ↔ 100%	Reticle size
	< >
	125%

VAST.Rehab
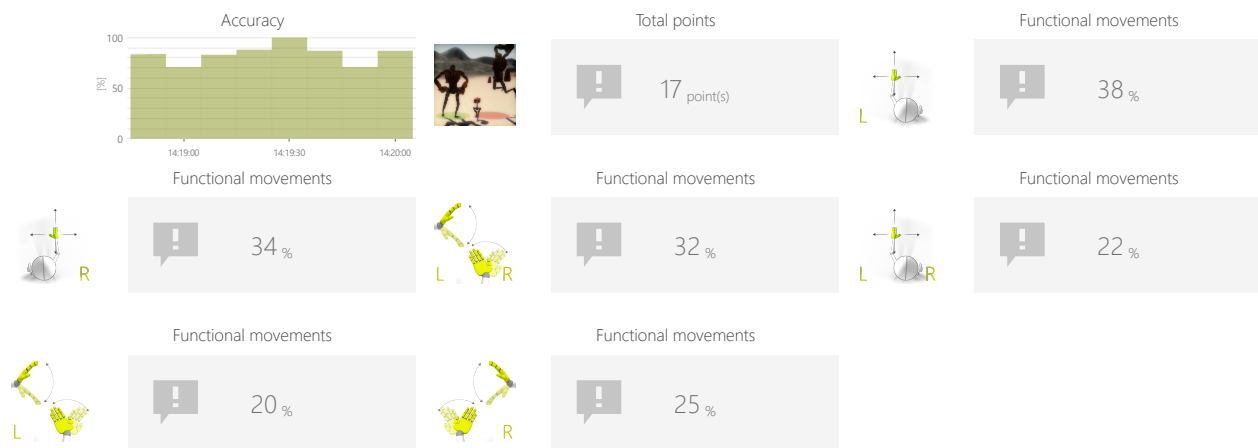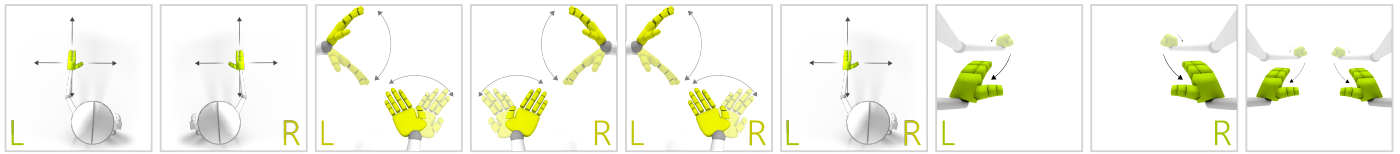REHABILITATION IN VIRTUAL REALITY

FUNCTIONAL MOVEMENTS
RUNAWAY

Measure and train individual's skills to perform movements based on real-world situational biomechanics. They usually involve multi-planar, multi-joint movements which place demand on the body's core musculature and innervation.

CONTROL MODES

RESULTS

Accuracy	Total points	Functional movements
	17 point(s)	38 %
Functional movements	Functional movements	Functional movements
34 %	32 %	22 %
Functional movements	Functional movements	
20 %	25 %	

ADJUSTMENTS

- Task duration
- Range
- Number of enemies
- Enemies speed

OBJECTIVES

- Predicting the trajectory of objects in 3D space
- Response to negative visual stimuli
- Focusing
- Perceptivity
- Balance and equilibrium training

INSTRUCTION FOR PATIENT

Keep away from the big robots

VAST.Rehab
REHABILITATION IN VIRTUAL REALITY

FUNCTIONAL MOVEMENTS
RUNAWAY

SAMPLE SETTINGS

Difficulty **1/3**

Duration	Range
90s	L 0%◄►100%

Number of enemies	Enemies speed
2	100%

Difficulty **Custom**

Duration	Range
90s	L 0%◄►100%

Number of enemies	Enemies speed
4	100%

VAST.Rehab
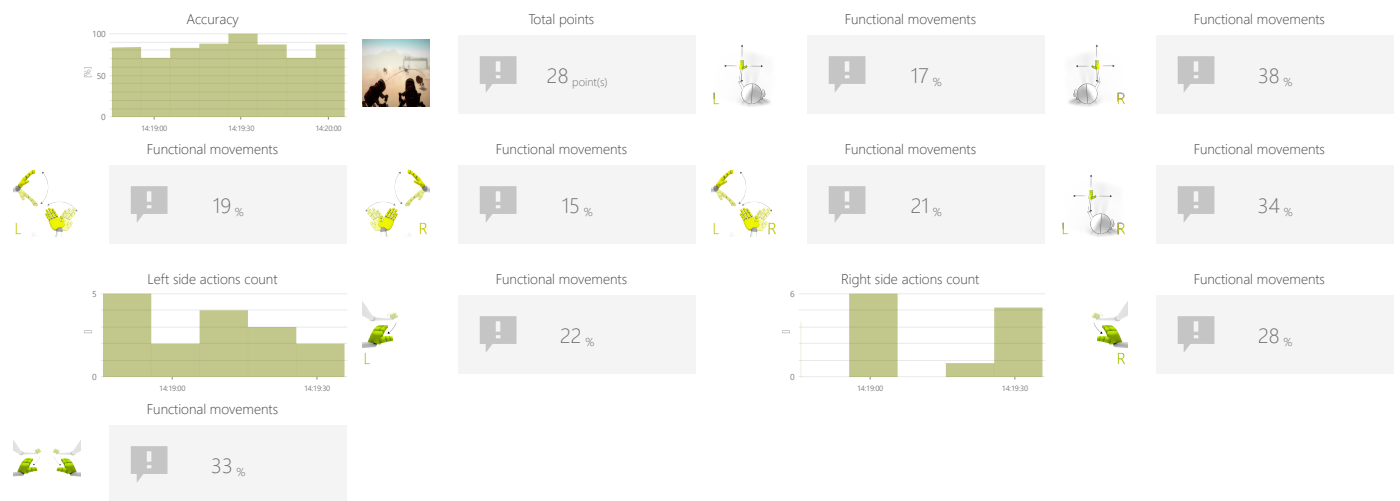REHABILITATION IN VIRTUAL REALITY

FUNCTIONAL MOVEMENTS
CANNON

Measure and train individual's skills to perform movements based on real-world situational biomechanics. They usually involve multi-planar, multi-joint movements which place demand on the body's core musculature and innervation.

CONTROL MODES

RESULTS

Accuracy	
Total points	28 point(s)
Functional movements	17 %
Functional movements	38 %
Functional movements	19 %
Functional movements	15 %
Functional movements	21 %
Functional movements	34 %
Left side actions count	
Functional movements	22 %
Right side actions count	
Functional movements	28 %
Functional movements	33 %

ADJUSTMENTS

• Task duration

• Range

• Time between cannonballs

• Time between enemies

• Enemies speed

OBJECTIVES

• Planning and Strategy

• Movement precision

• Predicting the trajectory of objects

INSTRUCTION FOR PATIENT

Use the cannon(s) to shoot into the robots coming in your direction

VAST.Rehab
REHABILITATION IN VIRTUAL REALITY

FUNCTIONAL MOVEMENTS
CANNON

SAMPLE SETTINGS

Difficulty	
◀	**1/3** ▶

Duration	Range
< >	100% / 0% / L / 0% ↔ 100%
90s	

Time between cannonballs	Time between enemies
2s	**4s**

Enemies speed
50%

Difficulty	
◀	**Custom** ▶

Duration	Time between enemies
< >	**4s**
90s	Enemies speed
	100%

34

VAST.Rehab
REHABILITATION IN VIRTUAL REALITY

FUNCTIONAL MOVEMENTS
AUTOMATIC CANNON

Measure and train individual's skills to perform movements based on real-world situational biomechanics. They usually involve multi-planar, multi-joint movements which place demand on the body's core musculature and innervation.

CONTROL MODES

RESULTS

Accuracy	Total points 15 point(s)	Functional movements 11 %	Functional movements 32 %
Functional movements 17 %	Functional movements 16 %	Functional movements 17 %	Functional movements 22 %
Functional movements 20 %	Functional movements 25 %	Functional movements 37 %	Functional movements 13 %
Functional movements 10 %	Functional movements 24 %	Functional movements 14 %	Functional movements 27 %
Functional movements 34 %	Functional movements 20 %	Functional movements 25 %	Functional movements 37 %
Functional movements 28 %	Functional movements 11 %	Functional movements 38 %	Functional movements 14 %
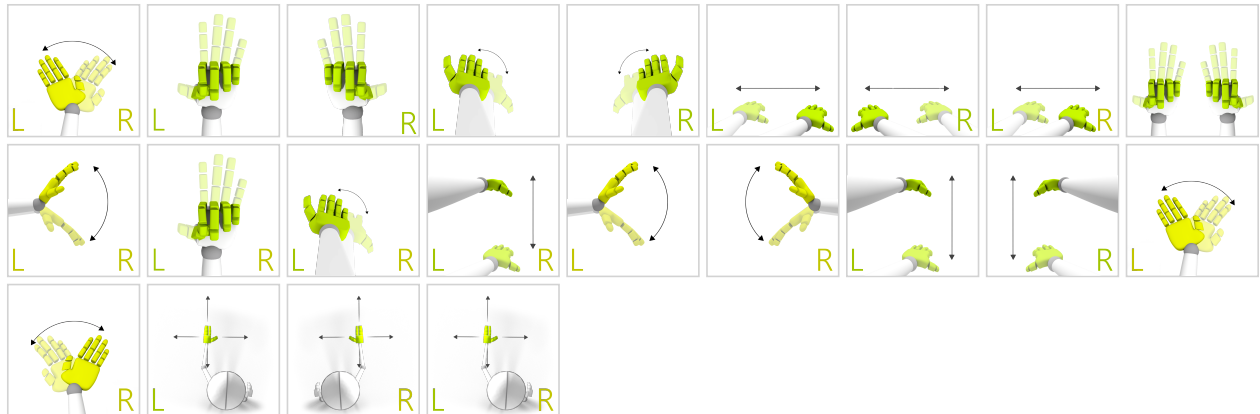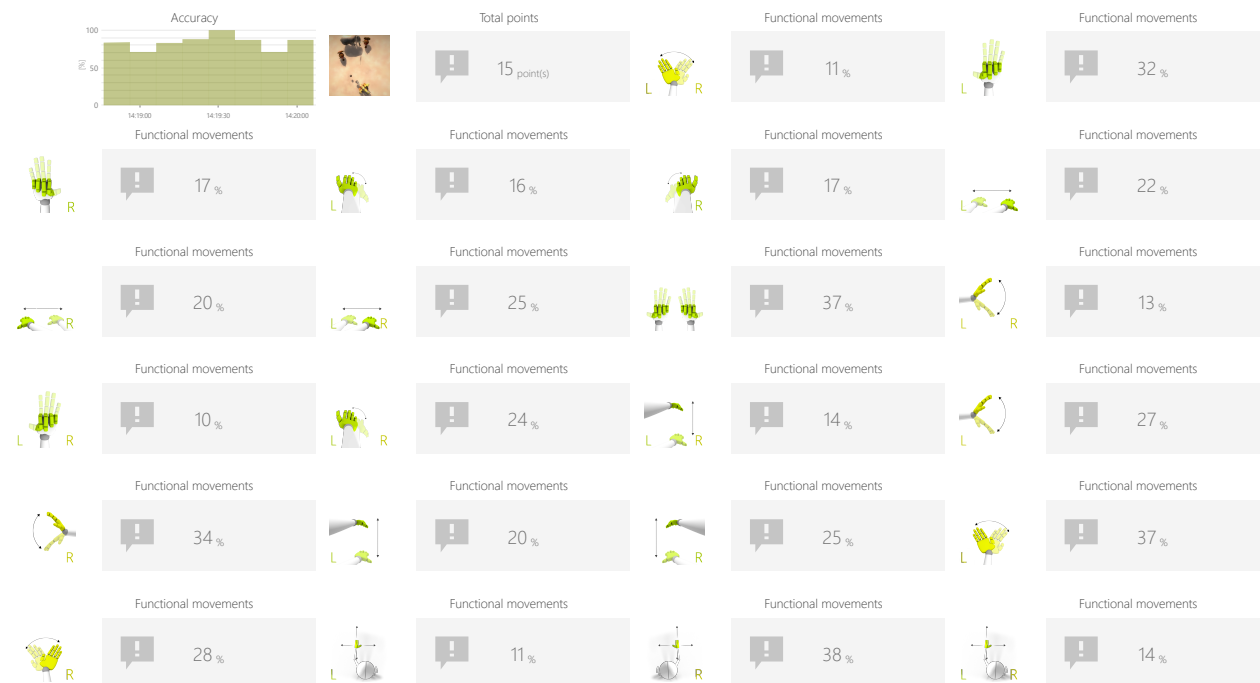
ADJUSTMENTS

• Task duration
• Range
• Enable distractors
• Time between cannonballs
• Time between enemies
• Enemies speed

OBJECTIVES

• Divided attention
• Spontaneous movements
• Arms swings
• Muscle strengthening

INSTRUCTION FOR PATIENT

Control cannon(s) to destroy robots, but avoid hitting the elephant!

VAST.Rehab
REHABILITATION IN VIRTUAL REALITY

FUNCTIONAL MOVEMENTS
AUTOMATIC CANNON

SAMPLE SETTINGS

Difficulty	
◀	**1/3**	▶

Duration	Range
< >	< >
90s	L R 0% ⟷ 100%

Enable distractors	Time between cannonballs
<	<
No	**1**s

Time between enemies	Enemies speed
<	<
3s	**50**%

Difficulty	
◀	**Custom**	▶

Duration	Range
< >	< >
90s	80% 20% L

Enable distractors	Time between cannonballs
<	<
No	**1**s

Time between enemies	Enemies speed
<	<
3s	**100**%

VAST.Rehab
REHABILITATION IN VIRTUAL REALITY
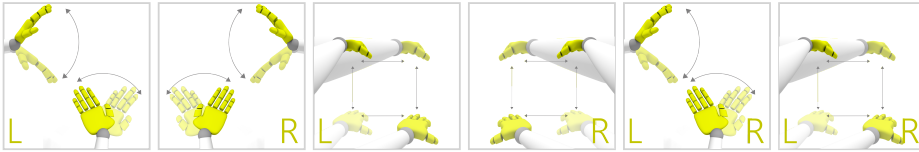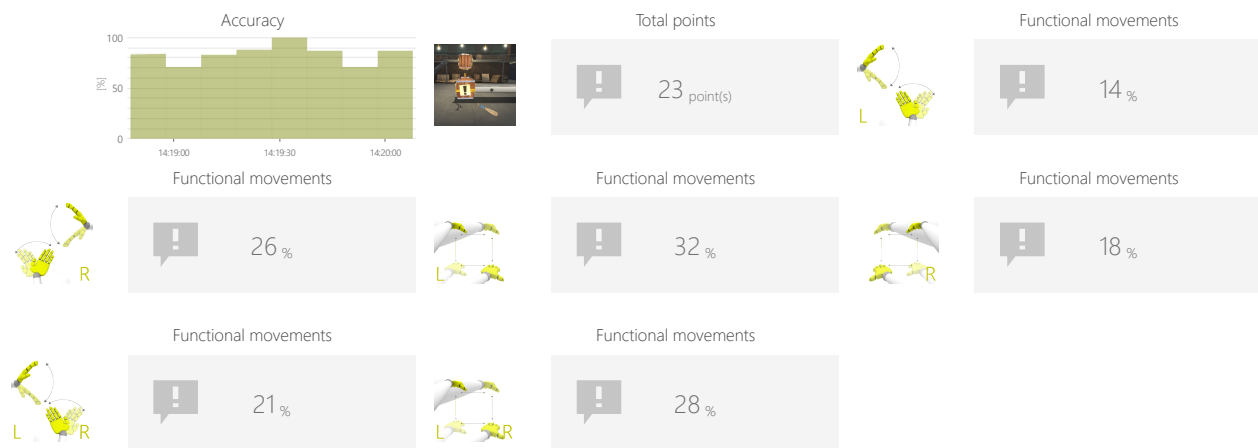
FUNCTIONAL MOVEMENTS
DRAGON

Measure and train individual's skills to perform movements based on real-world situational biomechanics. They usually involve multi-planar, multi-joint movements which place demand on the body's core musculature and innervation.

CONTROL MODES

RESULTS

Accuracy	Total points — 38 point(s)	Functional movements — 29 %	Functional movements — 11 %
Functional movements — 17 %	Functional movements — 29 %	Functional movements — 20 %	Functional movements — 36 %
Functional movements — 23 %	Functional movements — 14 %	Functional movements — 27 %	Functional movements — 38 %
Functional movements — 28 %	Functional movements — 21 %	Functional movements — 17 %	Functional movements — 37 %
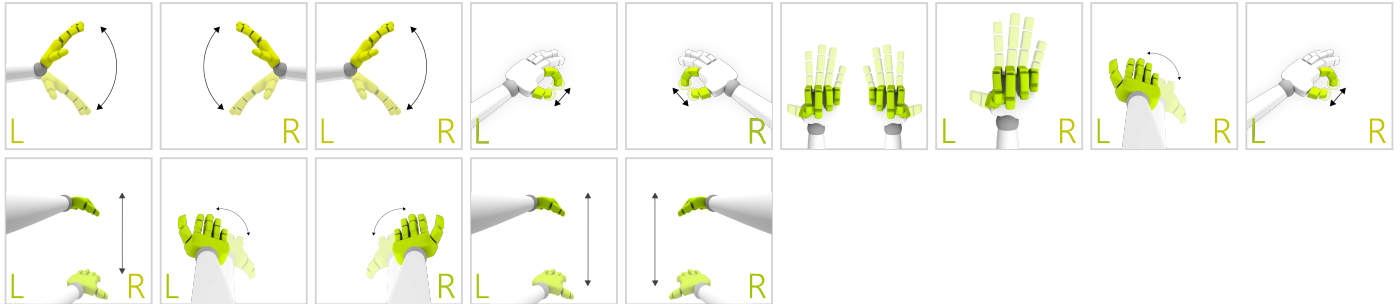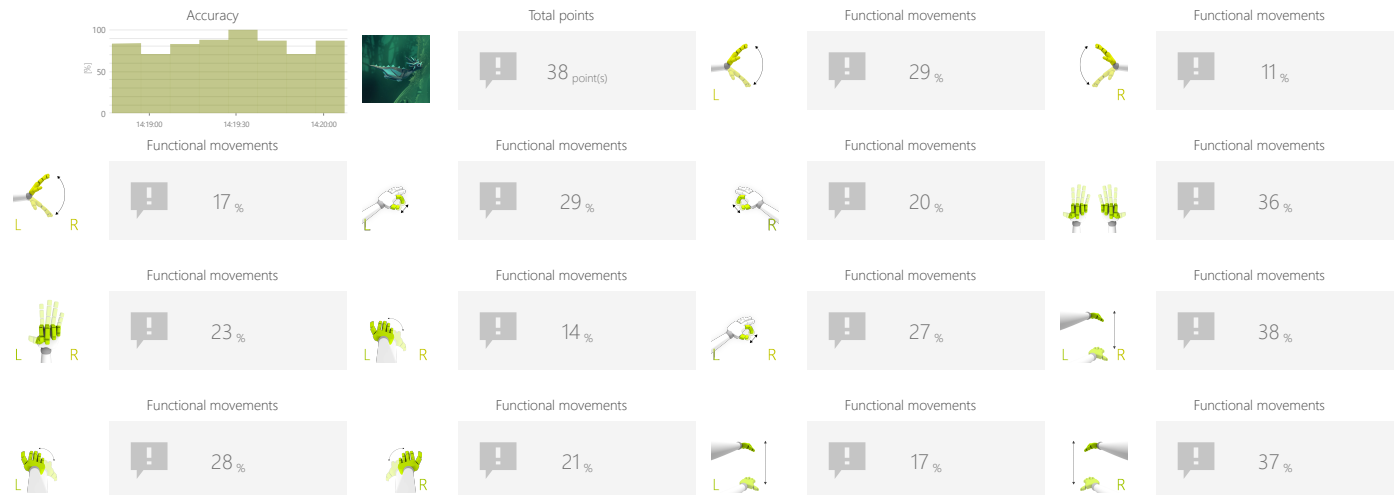
ADJUSTMENTS

- Task duration
- Range
- Coins group size
- Distance between coins
- Gravity force

OBJECTIVES

- Predicting the trajectory of objects
- Improve range of motion
- Visual motor coordination
- Muscle strengthening
- Planning and Strategy

INSTRUCTION FOR PATIENT

Fly and collect the coins

VAST.Rehab
REHABILITATION IN VIRTUAL REALITY

FUNCTIONAL MOVEMENTS
DRAGON

SAMPLE SETTINGS

Difficulty
Custom

Duration	Range
90s	100% / 0% L

Coins group size	Distance between coins
3	250%

Gravity force	
100%	

Difficulty
1/3

Duration	Range
90s	100% / 0% L

Coins group size	Distance between coins
5	250%

Gravity force	
100%	

VAST.Rehab
REHABILITATION IN VIRTUAL REALITY

FUNCTIONAL MOVEMENTS
BOX CRUSHER

Measure and train individual's skills to perform movements based on real-world situational biomechanics. They usually involve multi-planar, multi-joint movements which place demand on the body's core musculature and innervation.

CONTROL MODES

RESULTS

Accuracy	Total points	Functional movements
	23 point(s)	14 %

Functional movements	Functional movements	Functional movements
26 %	32 %	18 %

Functional movements	Functional movements
21 %	28 %

ADJUSTMENTS

• Positions to have targets on

• Task duration

• Range

• Required force

OBJECTIVES

• 3D space movements reproduction

• Movement awareness

• Muscle strengthening

• Repetitive movements

INSTRUCTION FOR PATIENT

Smash boxes with the club

VAST.Rehab
REHABILITATION IN VIRTUAL REALITY

FUNCTIONAL MOVEMENTS
BOX CRUSHER

SAMPLE SETTINGS

+3,5

Difficulty
1/3

Active positions

Duration
90s

Range
100°
0%
L
0% ◄► 100%

Required force
50%

VAST.Rehab
REHABILITATION IN VIRTUAL REALITY
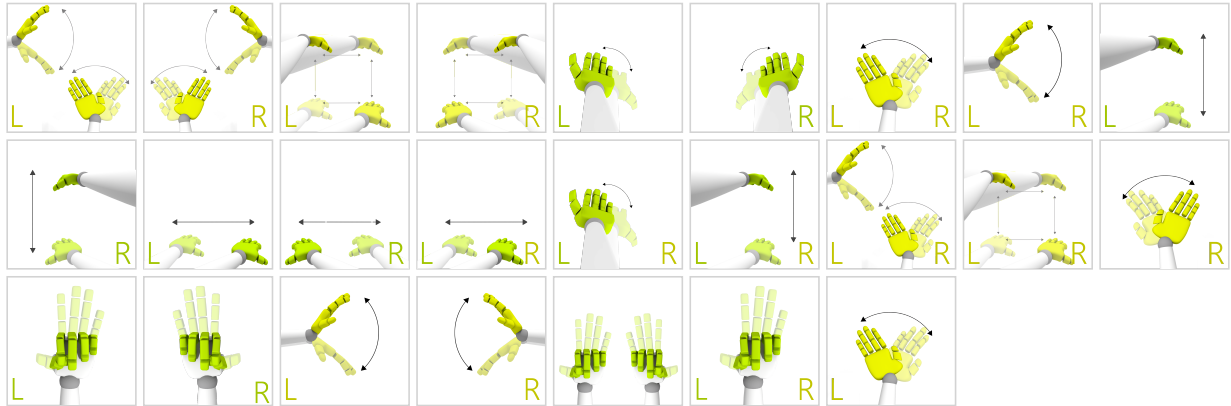
FUNCTIONAL MOVEMENTS
AMBULANCE

Measure and train individual's skills to perform movements based on real-world situational biomechanics. They usually involve multi-planar, multi-joint movements which place demand on the body's core musculature and innervation.

CONTROL MODES

RESULTS

Accuracy	Total points	Functional movements	Functional movements
	38 point(s)	25 %	31 %

Functional movements	Functional movements	Functional movements	Functional movements
13 %	33 %	32 %	16 %

Functional movements	Functional movements	Functional movements
30 %	29 %	34 %
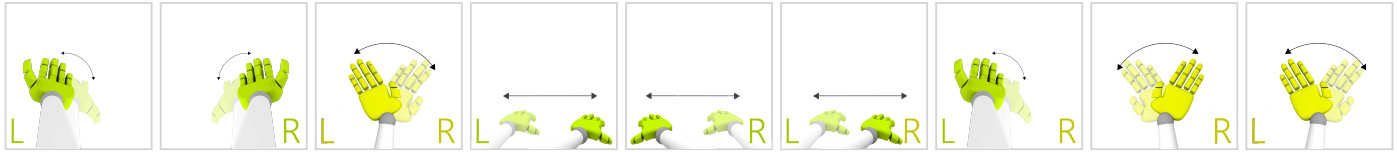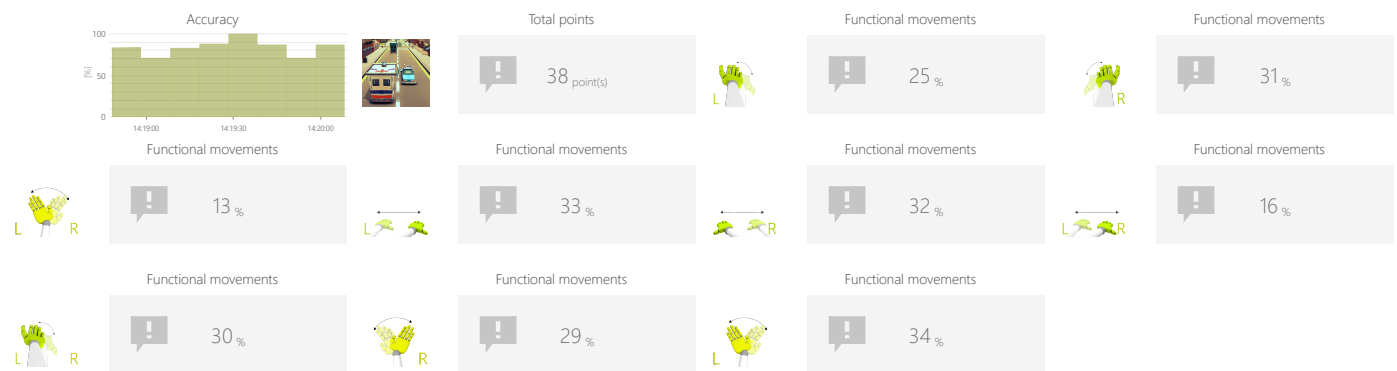
ADJUSTMENTS

• Task duration
• Range
• Distance between cars
• Player speed

OBJECTIVES

• Balance and equilibrium training
• Dynamics of planned movements
• Focusing
• Speed of decision making
• Visual motor coordination

INSTRUCTION FOR PATIENT

Go as fast as you can and avoid hitting other cars

VAST.Rehab
REHABILITATION IN VIRTUAL REALITY

FUNCTIONAL MOVEMENTS
AMBULANCE

SAMPLE SETTINGS

Difficulty
2/3

Duration
30s

Range
L
80% ↔ 20%

Distance between cars
50%

Player speed
50%

Difficulty
Custom

Duration
30s

Range
L
80% ↔ 20%

Distance between cars
200%

Player speed
50%

VAST.Rehab
REHABILITATION IN VIRTUAL REALITY
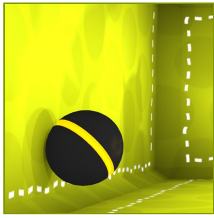
FUNCTIONAL MOVEMENTS
ARCANOID

Measure and train individual's skills to perform movements based on real-world situational biomechanics. They usually involve multi-planar, multi-joint movements which place demand on the body's core musculature and innervation.

CONTROL MODES

RESULTS

Accuracy	Total points — 32 point(s)	Functional movements — 16 %	Functional movements — 21 %
Functional movements — 33 %	Functional movements — 39 %	Functional movements — 38 %	Functional movements — 13 %
Functional movements — 26 %	Functional movements — 31 %	Functional movements — 12 %	Functional movements — 39 %
Functional movements — 29 %	Functional movements — 27 %	Functional movements — 32 %	Functional movements — 29 %
Functional movements — 34 %	Functional movements — 22 %	Functional movements — 28 %	Functional movements — 37 %
Functional movements — 26 %	Functional movements — 19 %	Functional movements — 10 %	Functional movements — 32 %
Functional movements — 30 %	Functional movements — 35 %	Functional movements — 17 %	

ADJUSTMENTS

• Task duration
• Range
• Reticle size
• Speed of objects

OBJECTIVES

• Dynamics of planned movements
• Predicting the trajectory of objects in 3D space
• Visual motor coordination

INSTRUCTION FOR PATIENT

Destroy as many boxes as you can
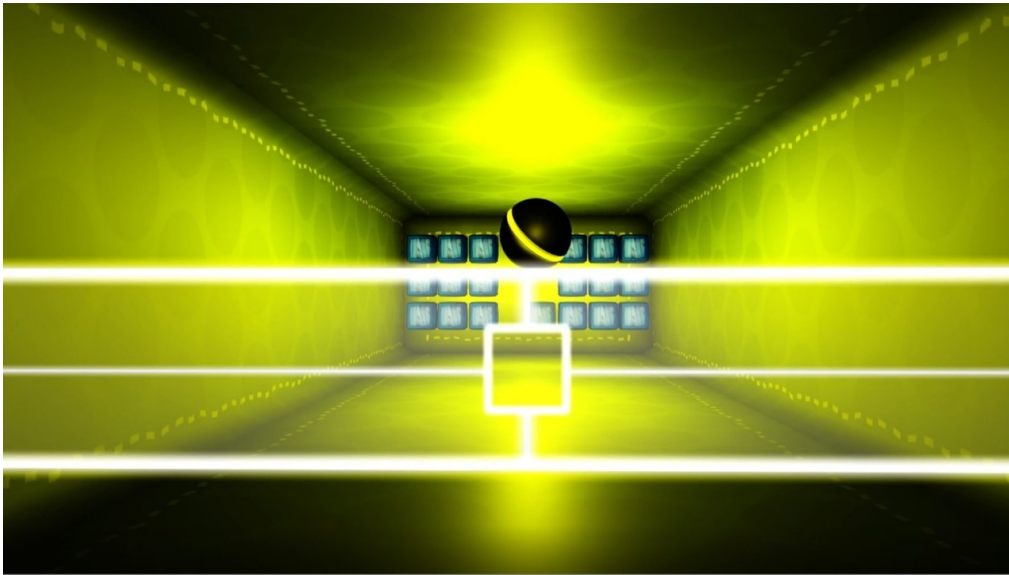
VAST.Rehab
REHABILITATION IN VIRTUAL REALITY

FUNCTIONAL MOVEMENTS
ARCANOID

SAMPLE SETTINGS

Difficulty	**Custom**
Duration	Range
90s	L R
Reticle size	Speed of objects
100%	70%

Difficulty	**Custom**
Duration	Range
90s	L 80% ↔ 20%
Reticle size	Speed of objects
75%	70%

VAST.Rehab
REHABILITATION IN VIRTUAL REALITY
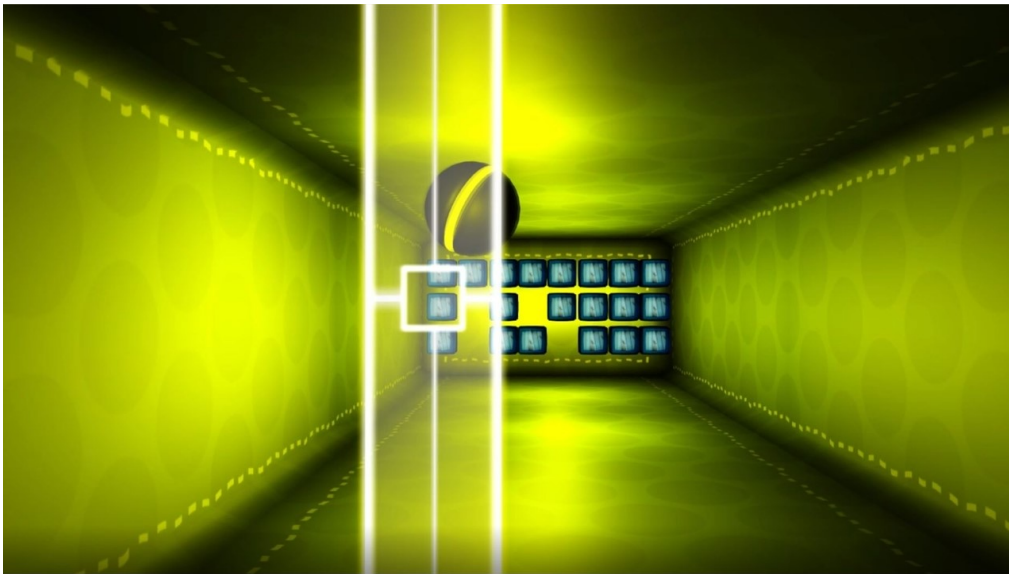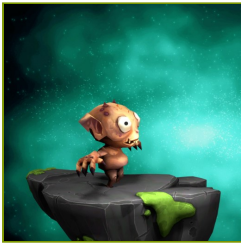
FUNCTIONAL MOVEMENTS
ROCKET JUMPING

Measure and train individual's skills to perform movements based on real-world situational biomechanics. They usually involve multi-planar, multi-joint movements which place demand on the body's core musculature and innervation.

CONTROL MODES

RESULTS

Accuracy

Total points
16 point(s)

Functional movements — L — 15 %
Functional movements — R — 37 %
Functional movements — L — 23 %
Functional movements — R — 29 %
Functional movements — 27 %
Functional movements — L R — 32 %
Functional movements — L — 31 %
Functional movements — R — 37 %
Functional movements — L — 17 %
Functional movements — R — 28 %
Functional movements — L R — 19 %
Functional movements — L R — 33 %
Functional movements — L R — 22 %
Functional movements — L R — 20 %
Functional movements — R — 26 %
Functional movements — L — 22 %
Functional movements — R — 27 %
Functional movements — L — 10 %
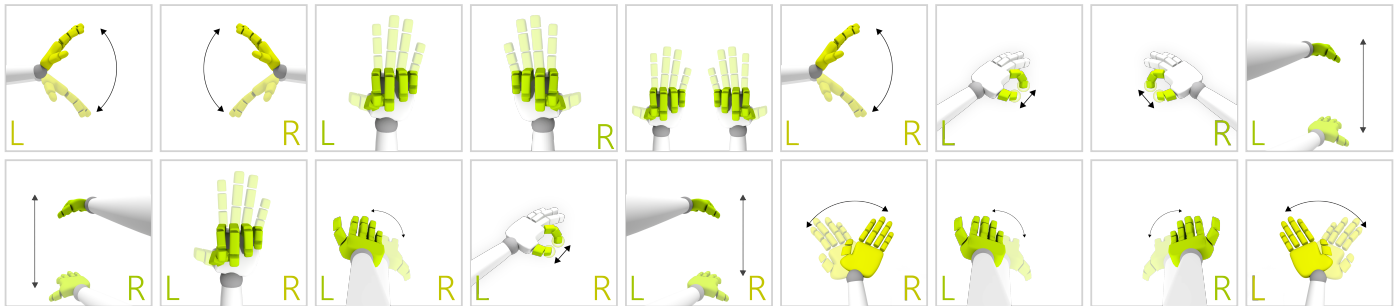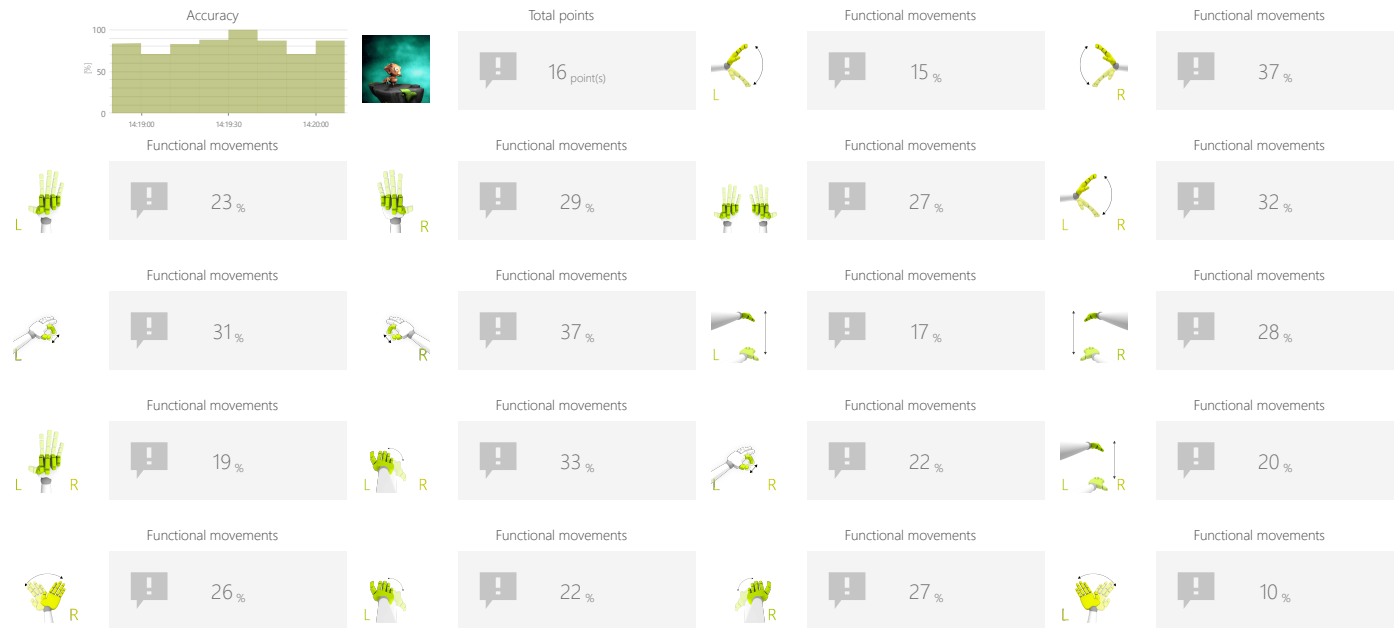
ADJUSTMENTS

• Task duration
• Range
• Time between objects
• Bomb format
• Speed of objects

OBJECTIVES

• Spontaneous movements
• Dynamic responses to emerging moving targets
• Predicting the trajectory of objects

INSTRUCTION FOR PATIENT

Help the creature jump over incoming rockets and avoid being hit.

VAST.Rehab
REHABILITATION IN VIRTUAL REALITY

FUNCTIONAL MOVEMENTS
ROCKET JUMPING

SAMPLE SETTINGS

Difficulty
◄ 1/3 ►

Duration	Range
90s	L

Time between objects	Bomb format
5s	1

Speed of objects
100%

Difficulty
◄ Custom ►

Duration	Range
90s	L

Time between objects	Bomb format
5s	2

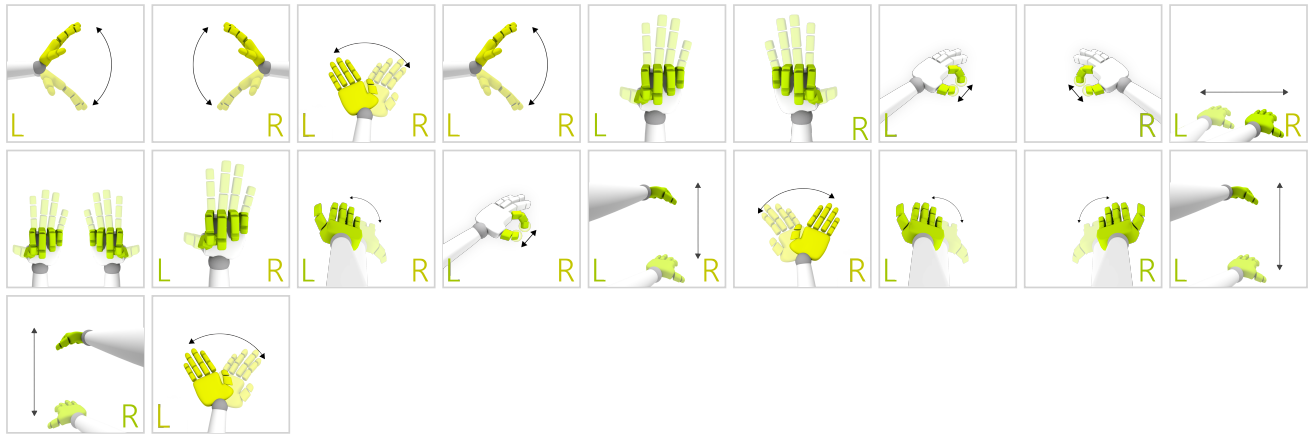Speed of objects
100%

VAST.Rehab
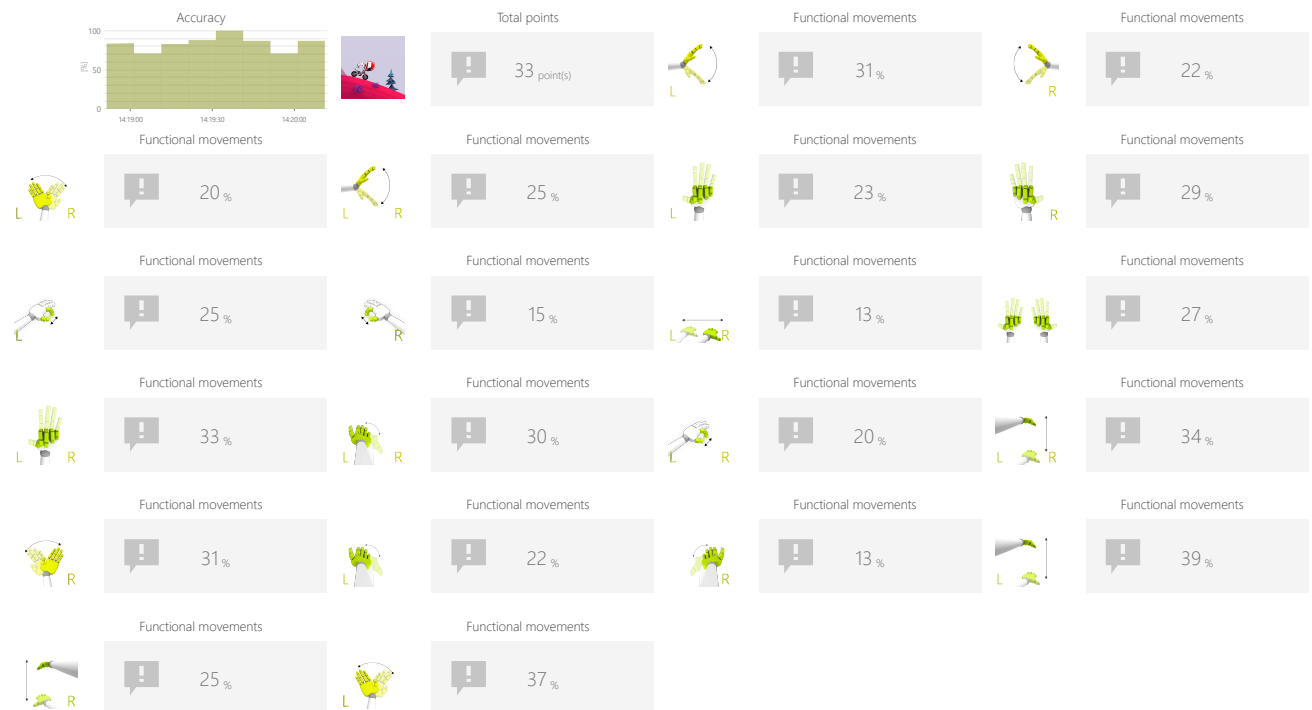REHABILITATION IN VIRTUAL REALITY

FUNCTIONAL MOVEMENTS
## RAILS

Measure and train individual's skills to perform movements based on real-world situational biomechanics. They usually involve multi-planar, multi-joint movements which place demand on the body's core musculature and innervation.

CONTROL MODES

RESULTS

Accuracy	Total points	Functional movements
	20 point(s)	11 %

Functional movements	Functional movements	Functional movements	Functional movements
23 %	21 %	26 %	38 %

Functional movements	Functional movements	Functional movements
13 %	26 %	31 %

Functional movements
13 %
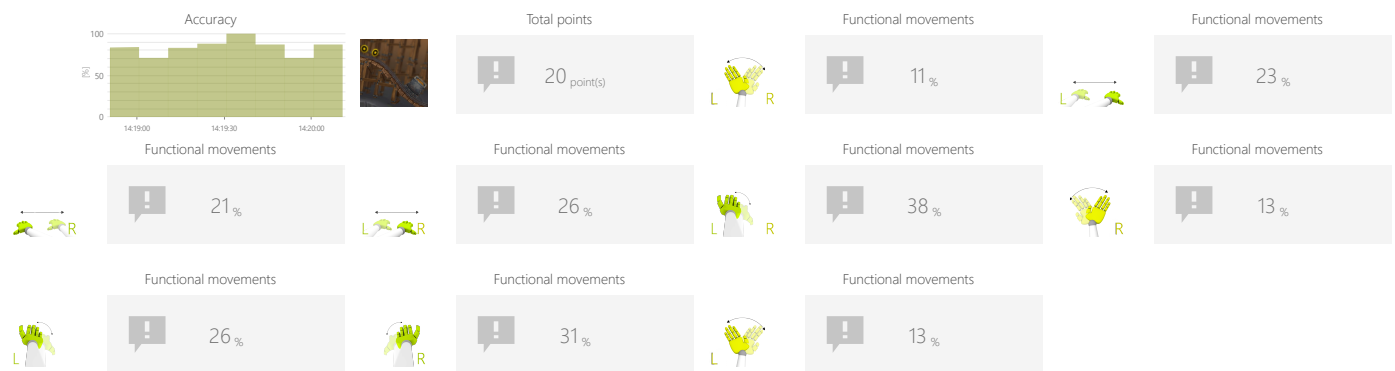
ADJUSTMENTS

- Task duration
- Range
- Route shape
- Enable derailing
- Enable obstacles
- Time between objects
- Player speed

OBJECTIVES

- Dynamic responses to emerging moving targets
- Predicting the trajectory of objects
- Visual motor coordination

INSTRUCTION FOR PATIENT

Tilt the world to let the trolley collect the coins

VAST.Rehab
REHABILITATION IN VIRTUAL REALITY

FUNCTIONAL MOVEMENTS
RAILS

SAMPLE SETTINGS

Difficulty	**1/3**

Duration	Range
90s	L 0% ↔ 100% R

Route shape	Enable derailing
	No
	Enable obstacles
	No

Time between objects	Player speed
5s	100%

Difficulty	**3/3**

Duration	Range
90s	L 0% ↔ 100% R

Route shape	Enable derailing
	Yes
	Enable obstacles
	No

Time between objects	Player speed
5s	200%

VAST.Rehab
REHABILITATION IN VIRTUAL REALITY

FUNCTIONAL MOVEMENTS
MOTOCROSS

Measure and train individual's skills to perform movements based on real-world situational biomechanics. They usually involve multi-planar, multi-joint movements which place demand on the body's core musculature and innervation.

CONTROL MODES

RESULTS

Accuracy	Total points — 33 point(s)	Functional movements — 31 %
Functional movements — 22 %	Functional movements — 20 %	Functional movements — 25 %
Functional movements — 23 %	Functional movements — 29 %	Functional movements — 25 %
Functional movements — 15 %	Functional movements — 13 %	Functional movements — 27 %
Functional movements — 33 %	Functional movements — 30 %	Functional movements — 20 %
Functional movements — 34 %	Functional movements — 31 %	Functional movements — 22 %
Functional movements — 13 %	Functional movements — 39 %	Functional movements — 25 %
Functional movements — 37 %		

ADJUSTMENTS

• Task duration
• Range
• Route shape

OBJECTIVES

• Dynamics of planned movements
• Planning and Strategy

INSTRUCTION FOR PATIENT

accelerate and brake to cover the entire route as quickly as possible without tipping.

VAST.Rehab
REHABILITATION IN VIRTUAL REALITY

FUNCTIONAL MOVEMENTS
MOTOCROSS

SAMPLE SETTINGS

50

Difficulty
2/3

Duration

90s

Range

0% ↕ 100%

L

Route shape
Medium

VAST.Rehab
REHABILITATION IN VIRTUAL REALITY

FUNCTIONAL MOVEMENTS
FOREST RUNNER

Measure and train individual's skills to perform movements based on real-world situational biomechanics. They usually involve multi-planar, multi-joint movements which place demand on the body's core musculature and innervation.

CONTROL MODES

RESULTS

Accuracy	Total points	Functional movements	Functional movements
	19 point(s)	31 %	36 %
Functional movements	Functional movements	Functional movements	Functional movements
34 %	39 %	22 %	30 %
Functional movements	Functional movements	Functional movements	Functional movements
13 %	28 %	18 %	15 %
Functional movements			
21 %			
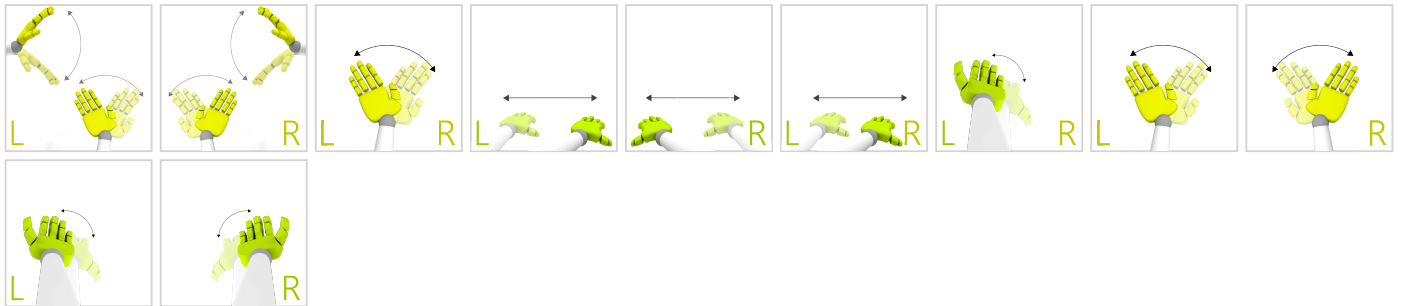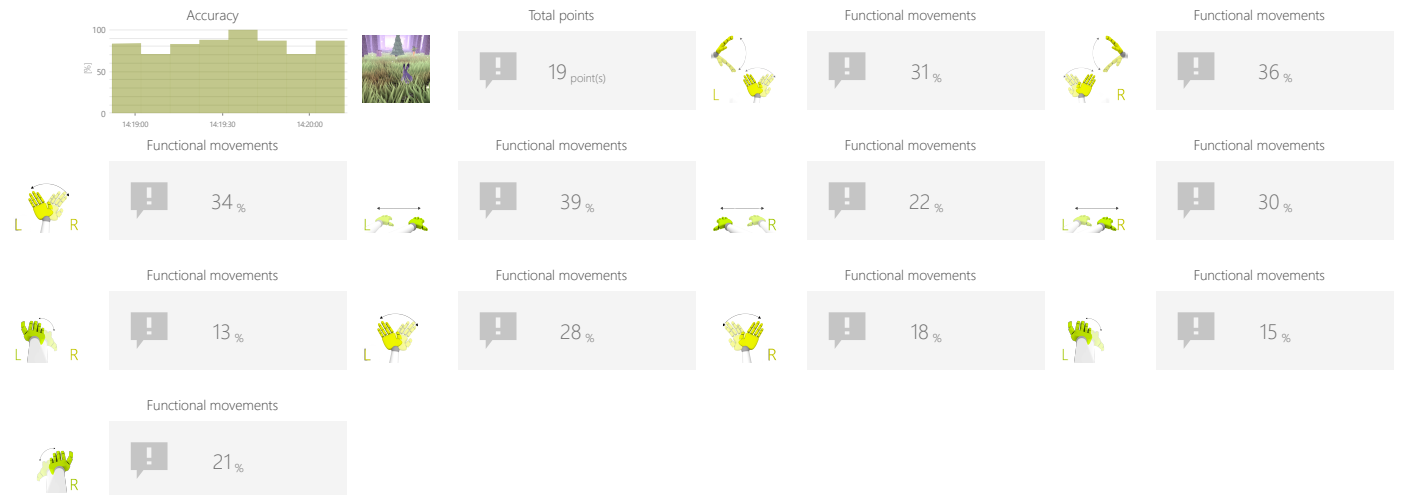
ADJUSTMENTS

• Task duration

• Range

• Player speed

OBJECTIVES

• Dynamics of planned movements

• Focusing

• Planned movements

• Speed of movement

INSTRUCTION FOR PATIENT

Keep the hare on the run, avoid obstacles and collect as many carrots as you can.

VAST.Rehab
REHABILITATION IN VIRTUAL REALITY

FUNCTIONAL MOVEMENTS
FOREST RUNNER

SAMPLE SETTINGS

Difficulty 1/2

Duration 90s

Range
100%
0%
L
0% ↔ 100%

Player speed 150%

VAST.Rehab
REHABILITATION IN VIRTUAL REALITY
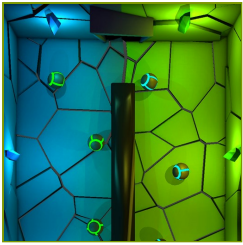
DIVIDED ATTENTION
SORTER

Measure and train individual's skills to successfully execute more than one action at a time, while paying attention to two or more channels of information.

CONTROL MODES
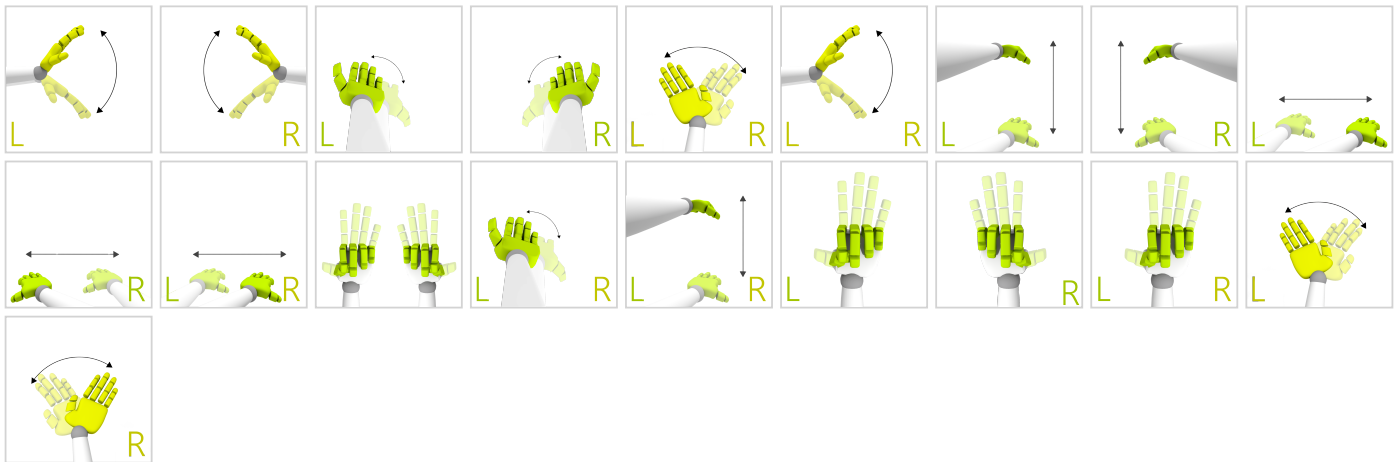
RESULTS
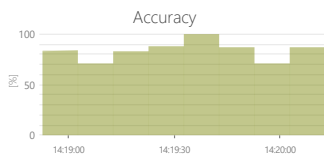
Accuracy	Total points	Divided attention
	! 23 point(s)	! 36 %

ADJUSTMENTS

• Task duration

• Range

• Number of objects

• Gap size

• Speed of objects

OBJECTIVES

• Predicting the trajectory of objects

• Focusing

• Perceptivity

• Movement precision

• Exercise with or without support from healthy limb
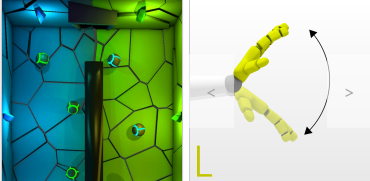
INSTRUCTION FOR PATIENT

Pass or block the balls so that the blue balls are on the blue side and the green balls are on the green side of the screen.

VAST.Rehab
REHABILITATION IN VIRTUAL REALITY

DIVIDED ATTENTION
SORTER

SAMPLE SETTINGS

Difficulty
1/3

Duration
30s

Range
100%
0%
L

Number of objects
4

Gap size
150%

Speed of objects
100%
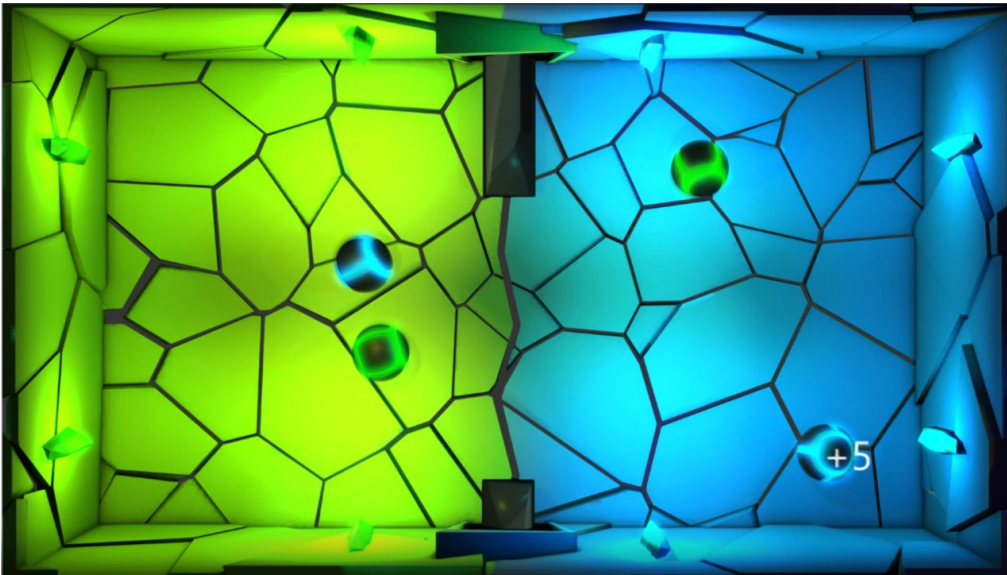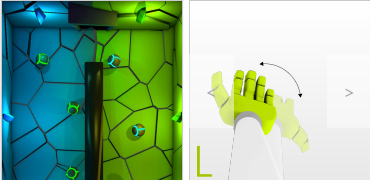
Difficulty
1/3

Duration
30s

Range
L
80% ↔ 20%

Number of objects
4

Gap size
150%

Speed of objects
100%

VAST.Rehab
REHABILITATION IN VIRTUAL REALITY
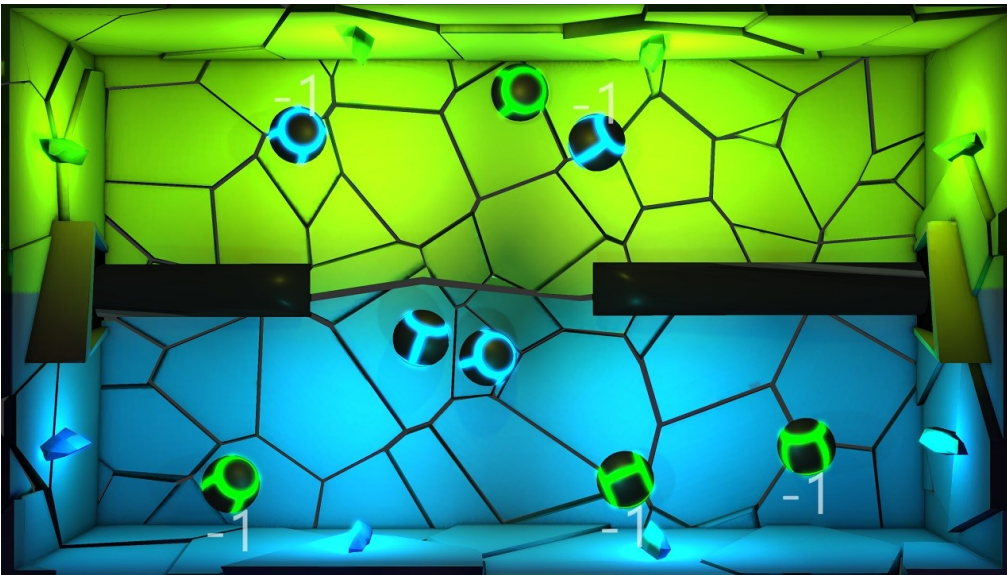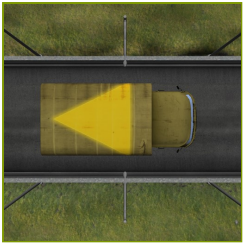
MEMORY
TRUCKS

Measure and train individual's skills to memorize information.

CONTROL MODES

RESULTS

Number of repetitions

Accuracy

Total points

! 19 point(s)

Memory

! 17 %
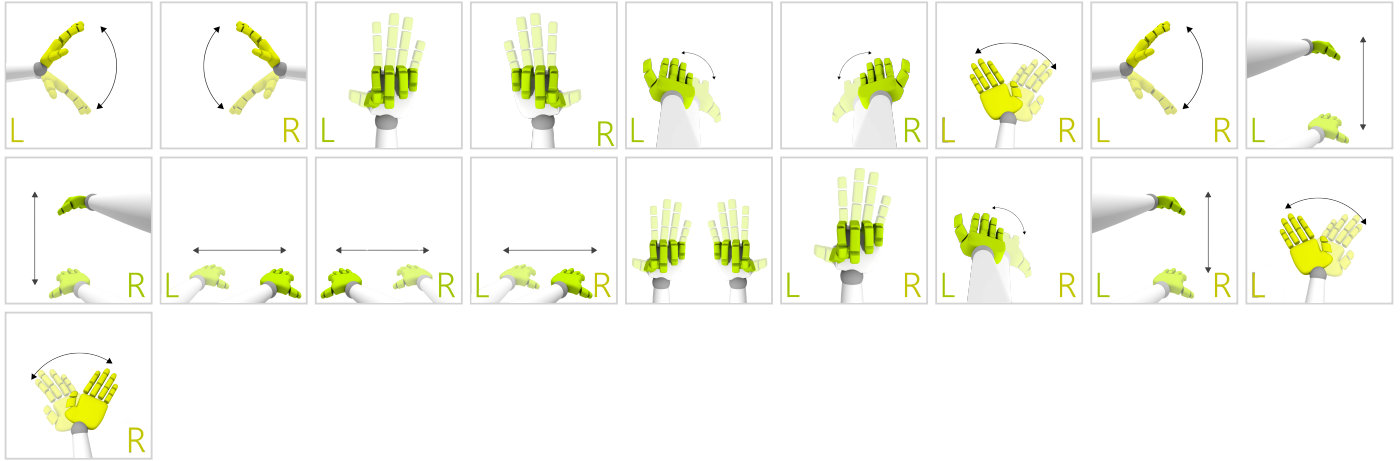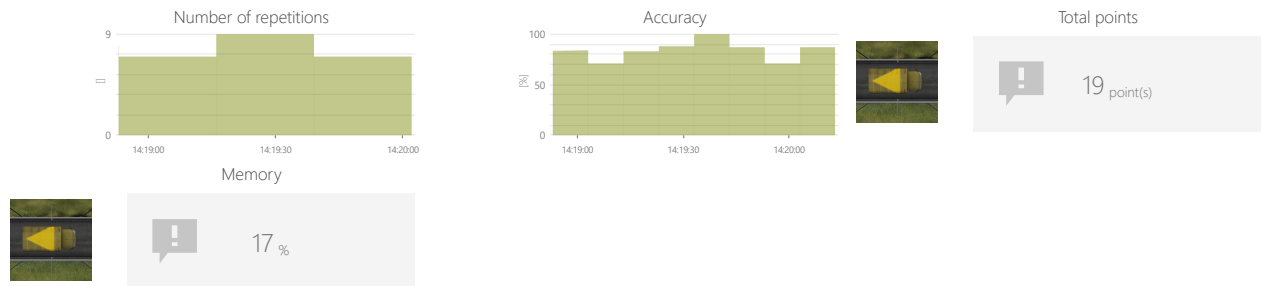
ADJUSTMENTS

• Task duration

• Range

• Variations

OBJECTIVES

• Logical tasks

• Focusing

• Perceptivity

INSTRUCTION FOR PATIENT

Remember the shape and/or its color on the roof of the car you see. Decide with thumbs up or down whether the next car has the same shape and/or color on the roof as the previous one.

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MEMORY
TRUCKS

SAMPLE SETTINGS
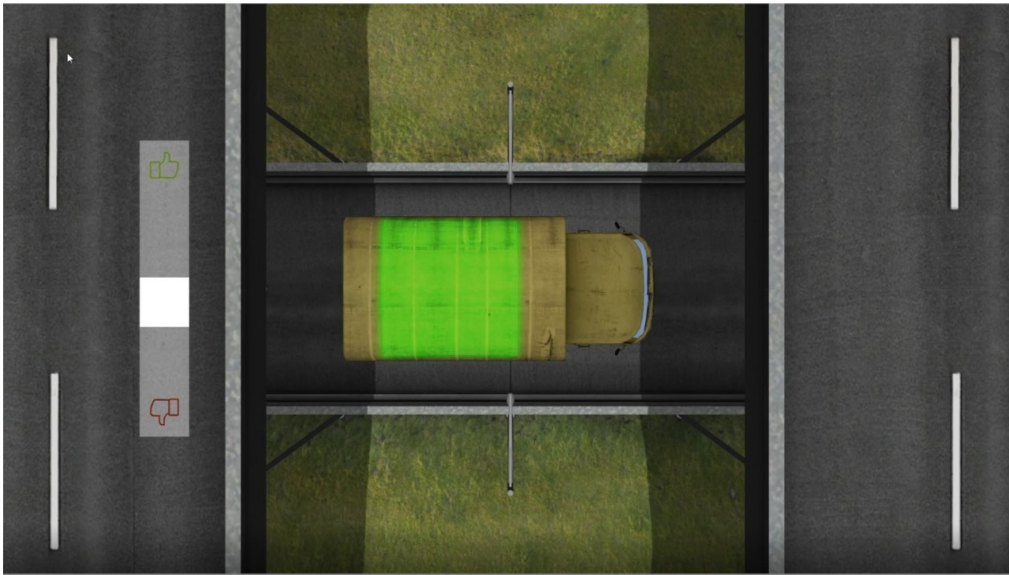
	Difficulty	
◄	**1/3**	►

Duration	Range
< >	0% — 100%
30s	L

Variations
colors >
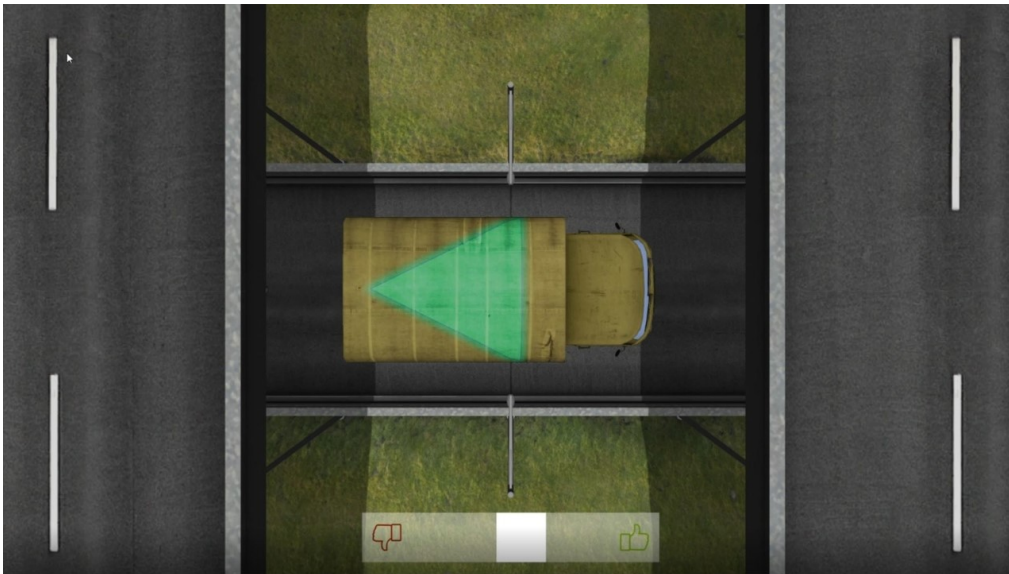
	Difficulty	
◄	**2/3**	►

Duration	Range
< >	< >
30s	L 80% ↔ 20%

Variations
shapes >

PROBLEM SOLVING
CLONES

Measure and train individual's skills to reach a solution of specific problems. Problem solving may include mathematical or systematic operations and can be a gauge of an individual's critical thinking skills.

CONTROL MODES

RESULTS

Accuracy

Total points

24 point(s)

Problem solving

37 %
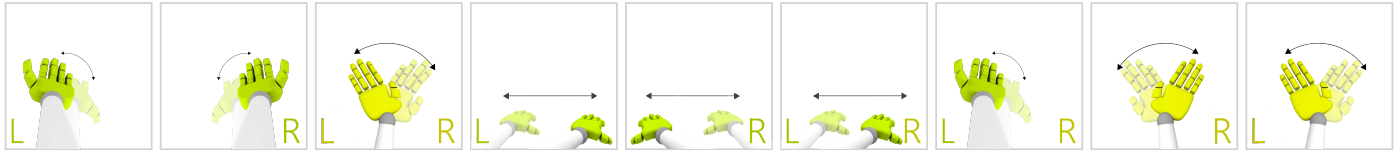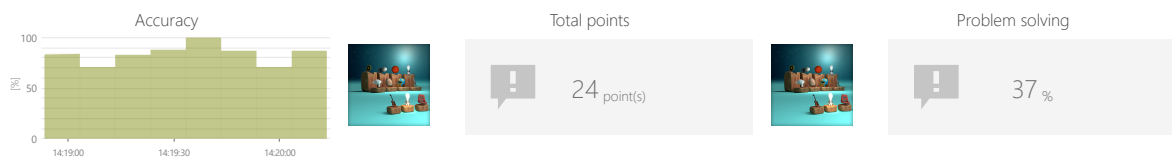
ADJUSTMENTS

• Task duration
• Time to complete action
• Range
• Number of pairs

OBJECTIVES

• Perceptivity
• Visual motor coordination
• Logical tasks

INSTRUCTION FOR PATIENT

Select the item which has a pair on the screen

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PROBLEM SOLVING
CLONES

SAMPLE SETTINGS

Difficulty
◄ **1/3** ►

Duration
< >
90s

Minitask duration
< >
30s

Range
< >
L
80% ⟷ 20%

Number of pairs
< >
4

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PROBLEM SOLVING
MAZE

Measure and train individual's skills to reach a solution of specific problems. Problem solving may include mathematical or systematic operations and can be a gauge of an individual's critical thinking skills.

CONTROL MODES

RESULTS

Accuracy

Total points
36 point(s)

Problem solving
27 %
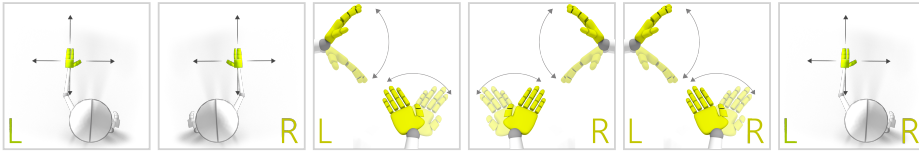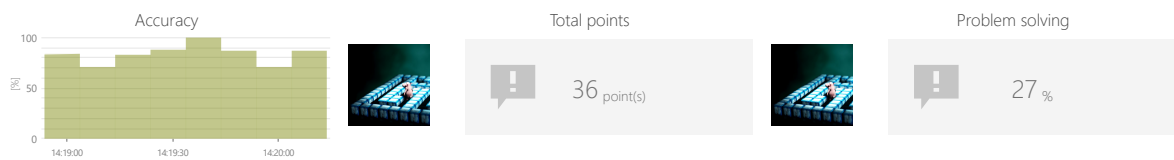
ADJUSTMENTS

• Task duration
• Range
• Show path
• Maze size

OBJECTIVES

• Logical tasks
• Planned movements
• Planning and Strategy
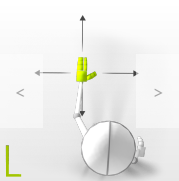
INSTRUCTION FOR PATIENT

Lead the hippo through the maze to the glowing target.
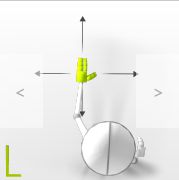
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SAMPLE SETTINGS

Difficulty	
◀	**2/4**	▶

Duration	Range
90s	L
Show path	Maze size
No	6

Difficulty	
◀	**Custom**	▶

Duration	Range
90s	L
Show path	Maze size
Yes	10

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SPECIALIZED
BLOOD PRESSURE

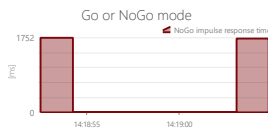Specialized tasks and evaluations that collect data from multiple categories or do have a unique objectives.

CONTROL MODES

OBJECTIVES

• Monitor external parameters

INSTRUCTION FOR PATIENT

Measure yourself your blood pressure and type it in the result

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SPECIALIZED
GONOGO TEST

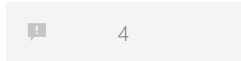Specialized tasks and evaluations that collect data from multiple categories or do have a unique objectives.
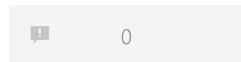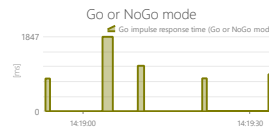
CONTROL MODES

RESULTS

Always Go mode
Go impulse response time (always Go mode)
951 [ms]
0
14:18:55   14:19:00

Number of Go impulses missed (always Go mode)
0

Go or NoGo mode
Go impulse response time (Go or NoGo mode)
1847 [ms]
0
14:19:00   14:19:30

Number of NoGo impulses hit (Go or NoGo mode)
2
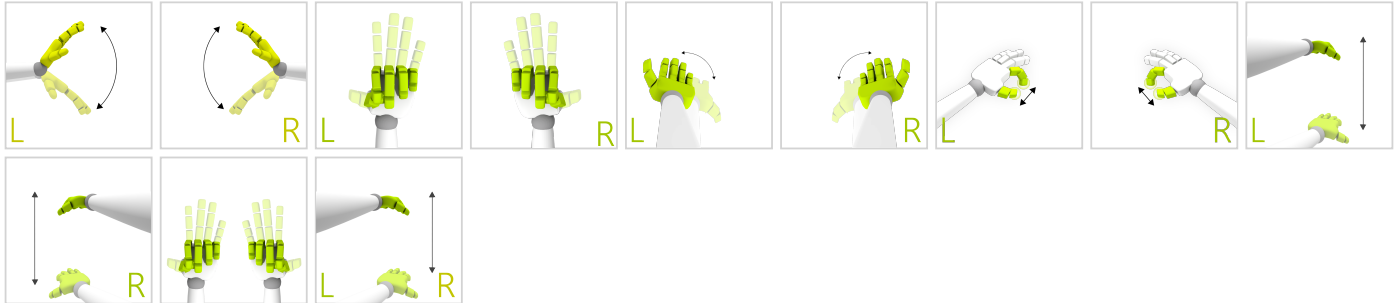
Number of NoGo impulses noticed (Go or NoGo mode)
4

Number of Go impulses missed (Go or NoGo mode)
1

Time delay caused by distraction
37 %

Always Go mode
3000 ms

Go or NoGo mode
NoGo impulse response time
1752 [ms]
0
14:18:55   14:19:00

Go or NoGo mode
NoGo impulse noticed
3000 [ms]
0
14:19:00   14:19:10   14:19:20

Go or NoGo mode
3032 ms
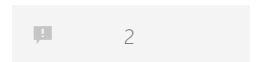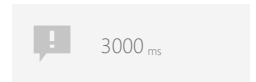
ADJUSTMENTS

• Range
• Required proper repetitions
• Hit if

OBJECTIVES

• Spontaneous movements
• Speed of movement
• Response to negative visual stimuli
• Reaction to the positive visual stimuli

INSTRUCTION FOR PATIENT

Hit the button when positive trigger appears

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