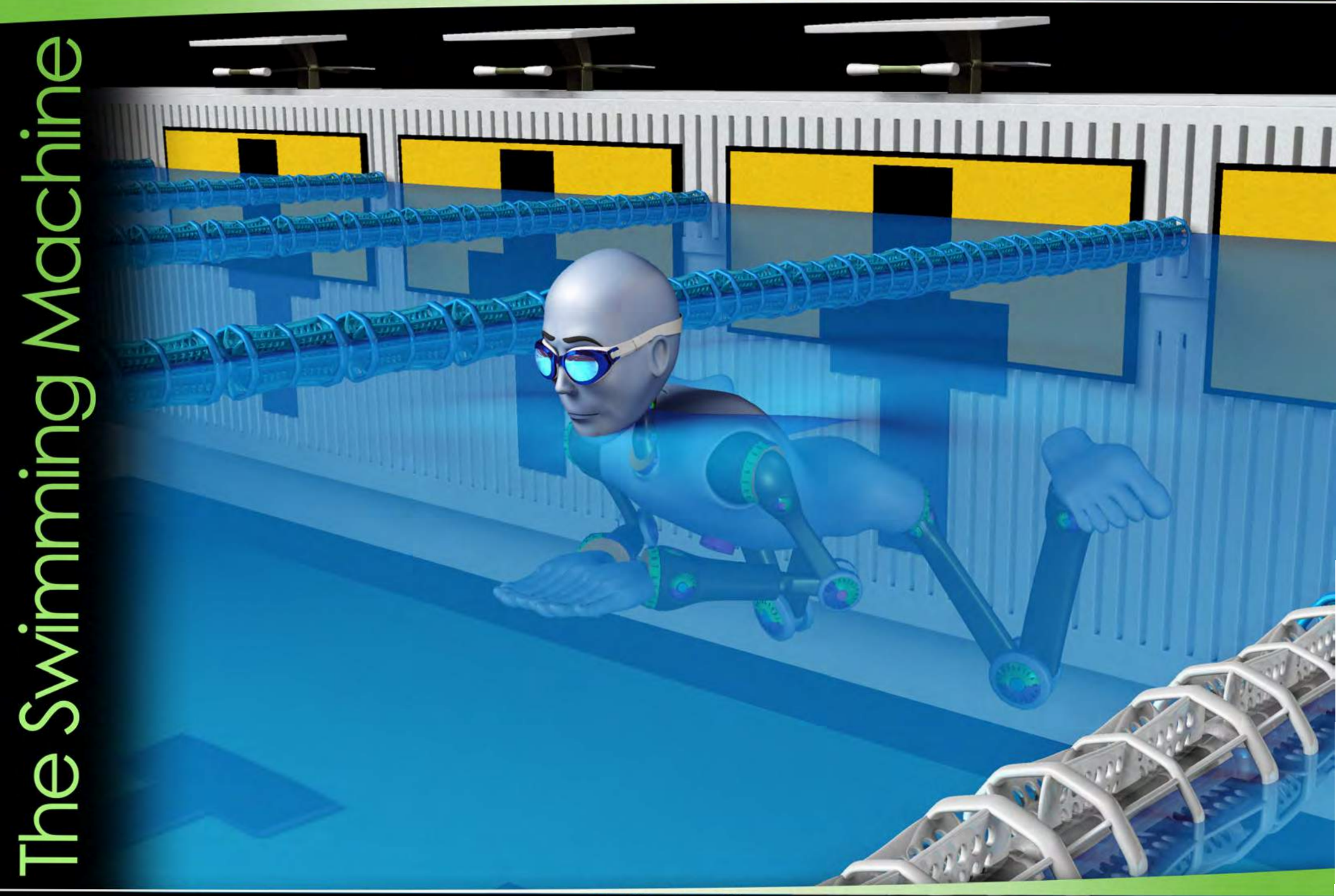
Breaststroke - Flat

The phases and dimensions of High Performance Flat Breaststroke

200 Level

TQ214.1

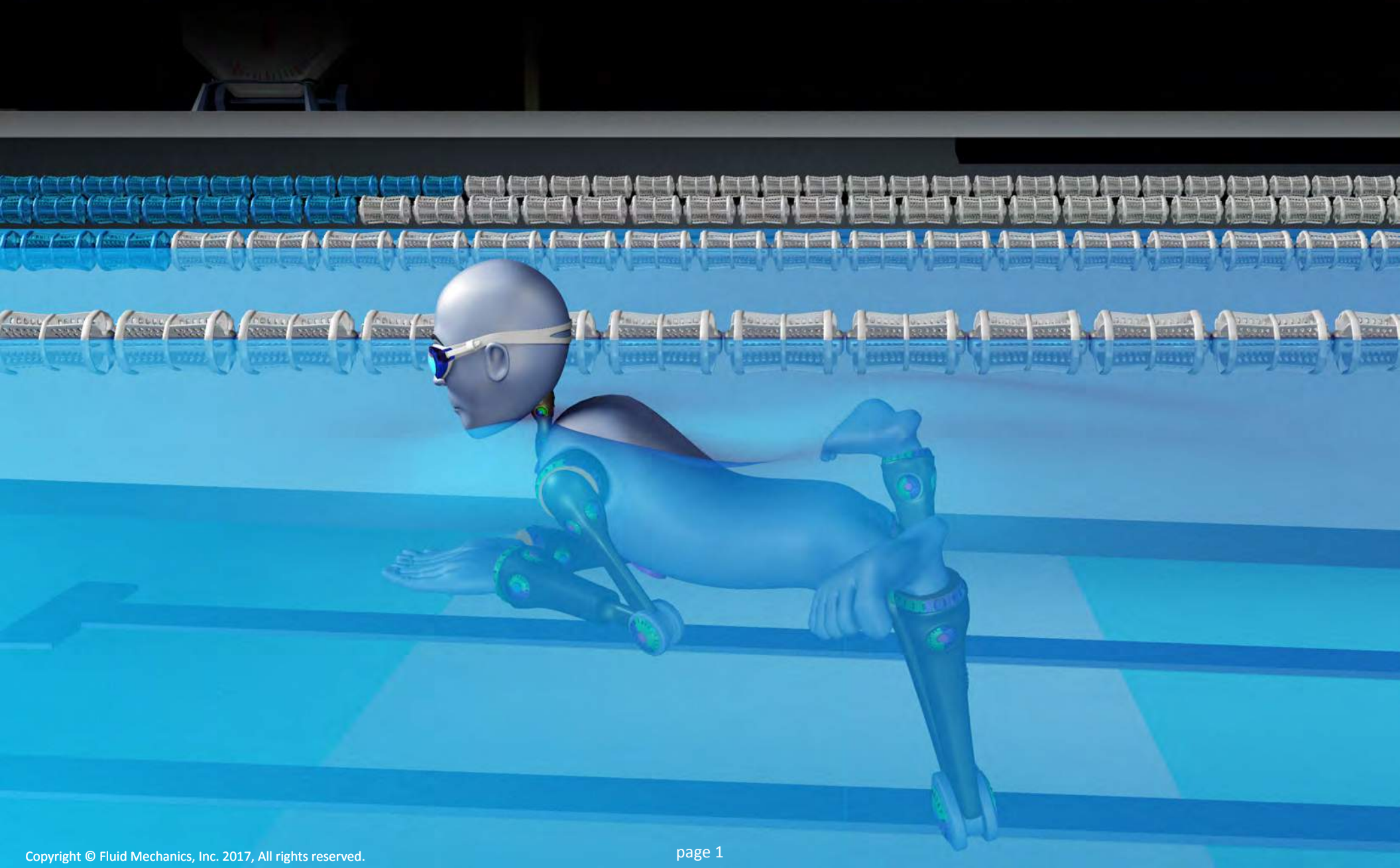
The Swimming Machine



Congratulations!

By purchasing this workbook, you've taken the first step in improving your swimming technique.

This innovative workbook will give you the skills and expertise needed to achieve optimal efficiency in the water and elevate your swimming to the next level.



What's Inside?

Table of Contents

Dimensions

Introduction

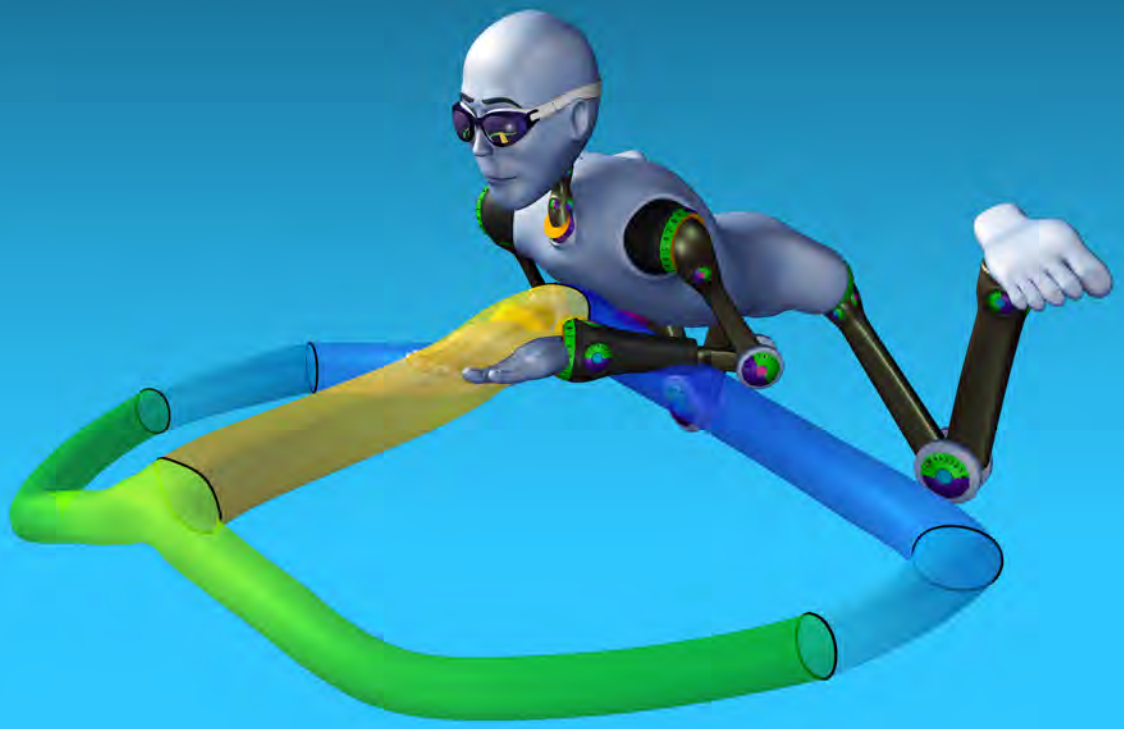
Our Teaching Method, FM Vision*Works*™

FM Vision***Works***™ is our unique, visual learning system with life-like avatars designed to teach the science of swimming. Our experts utilize advanced technology to breakdown the avatar's skeletal anatomy and represent ideal swimming techniques. Through the FM Vision***Works***™ process, swimmers discover how to maximize efficiency and achieve precise positioning. To sum it all up, our FM Vision***Works***™ learning system enables swimmers to quickly internalize advanced athletic concepts so they can convert their visions into action and transform their technique.

Get the FM Edge and dominate your competition

What to expect from this workbook

- Utilize our high performance blue print to enhance your technique
- Manipulate the water to gain an advantage
- Generate more force to drive you down the pool
- Apply timing to elevate efficiency and conserve energy
- Put it all together and blow your competition out of the water!



How to get the most from reading this workbook

- Visit our website to view our online presentations for this program.
- Call our main office or connect with our experts on Facebook to hear more about this and other featured programs.

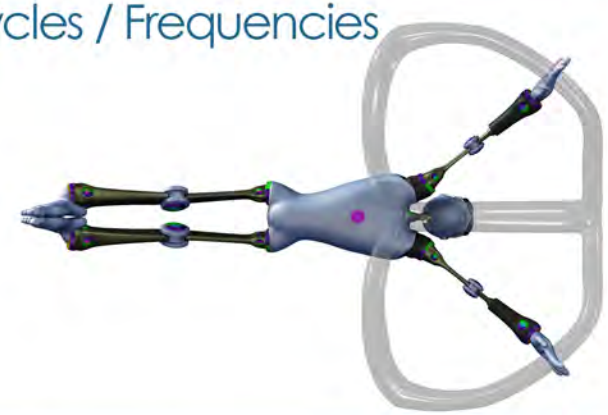
Credits

Creator: John B. Waldman
Author: Eric V. Thumma & John B. Waldman
Animator: Aaron F. Large
Graphic Artist: Clarissa J. Roper

Chapters

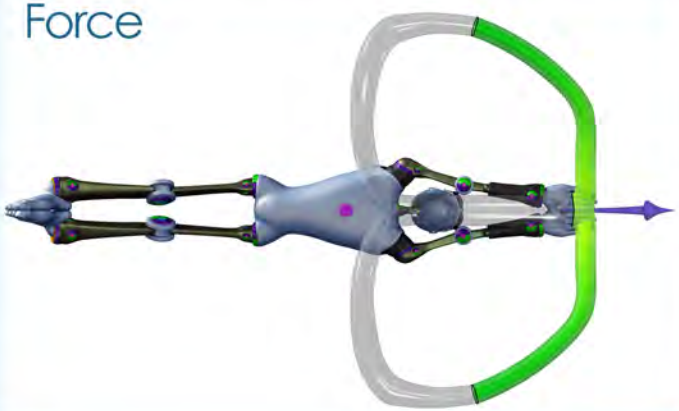
CF

Cycles / Frequencies



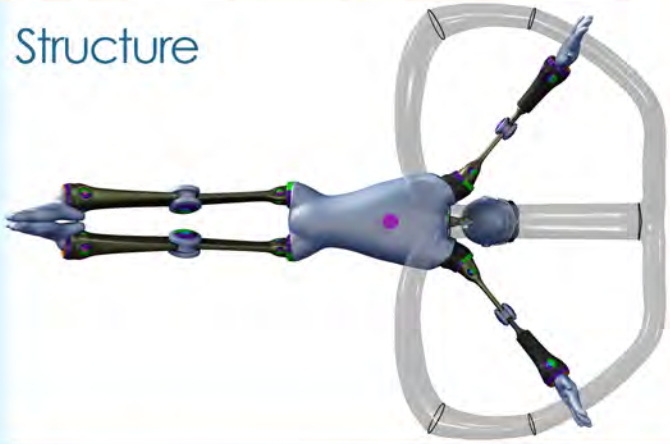
D3

Force



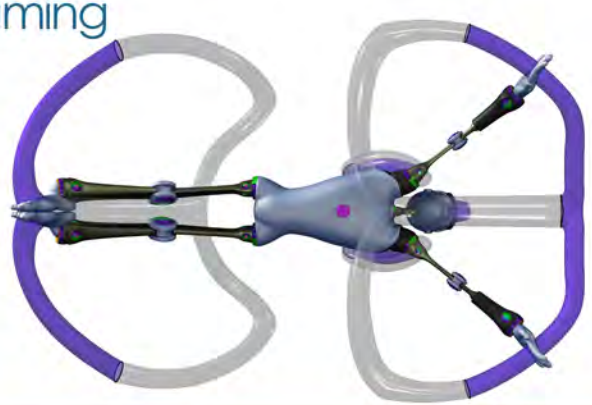
D1

Structure



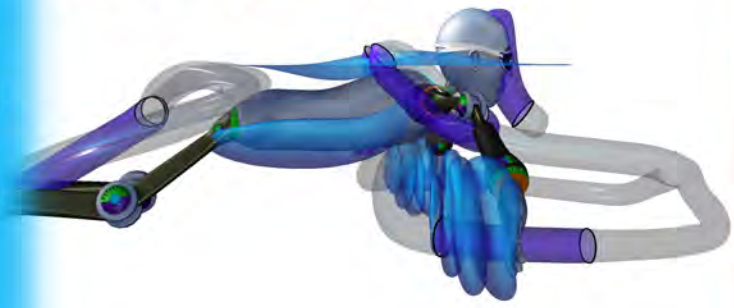
D4

Timing



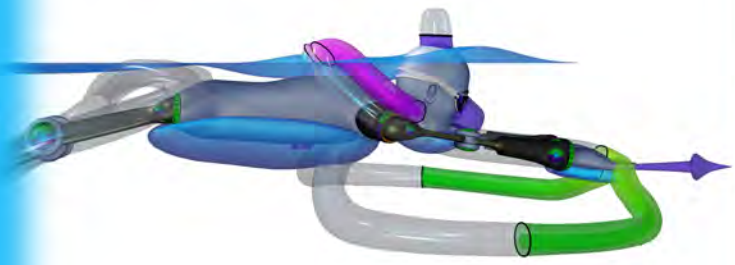
D2

Hydro Dynamics



D5

Blend

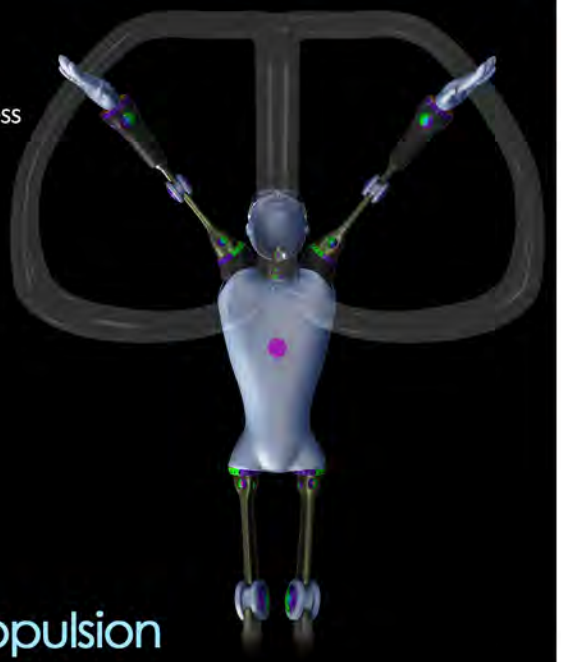


Cycles

A Arm

Pull

< the arms are under the xyphoid process
> the arms return to that position

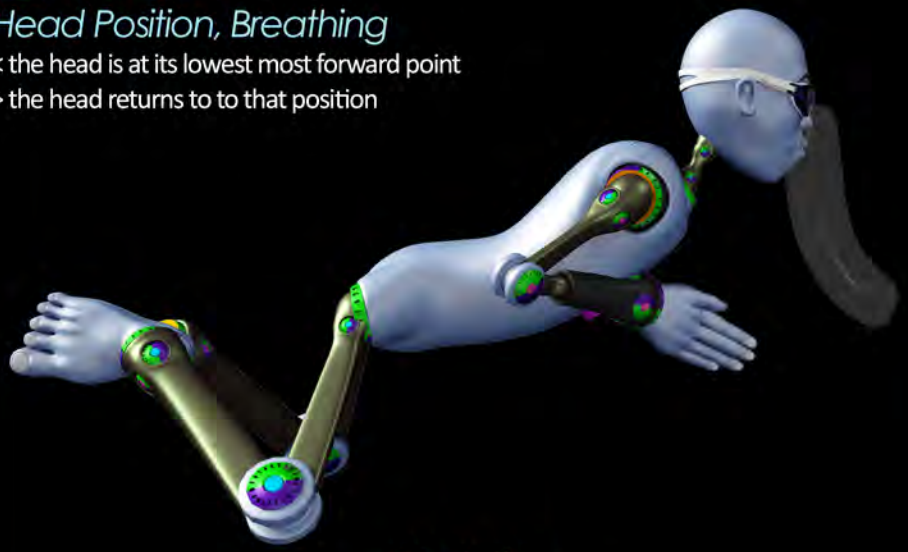


Propulsion

H Head

Head Position, Breathing

< the head is at its lowest most forward point
> the head returns to to that position

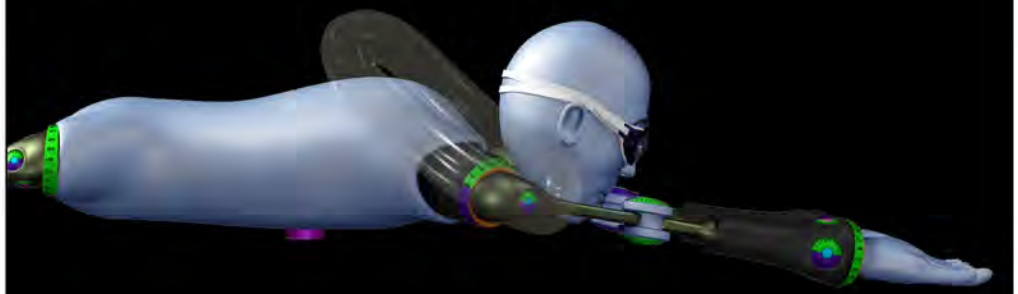


Stability

T Torso

Body

< the torso is at its lowest most forward point
> the torso returns to that position

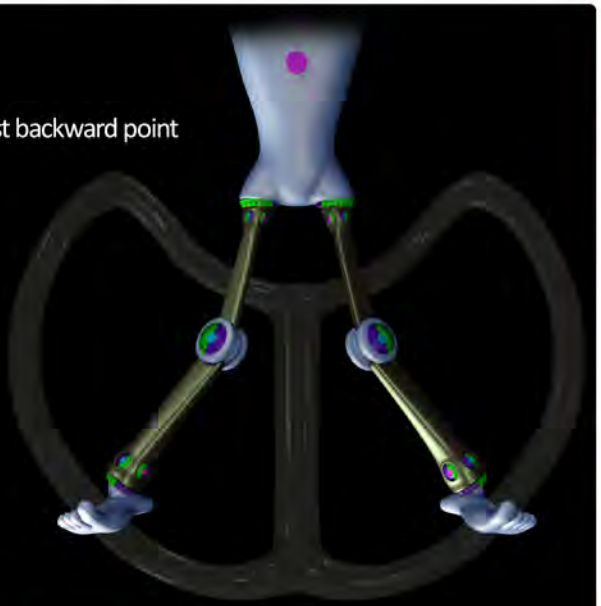


Power

L Leg

Kick

< the feet are together at their furthest backward point
> the feet return to that position



Stability

Frequencies

Breathing Frequencies

Stroke

Any Distance - breath every stroke

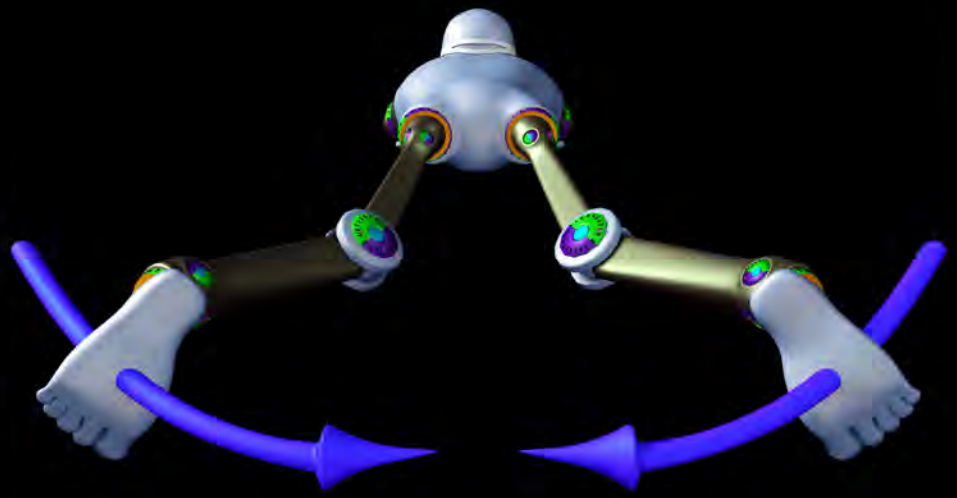
Turn

Any Distance - breath during arm recovery on every turn

Start

Any Distance - breath on the break out from the long pull out

Kick Frequency

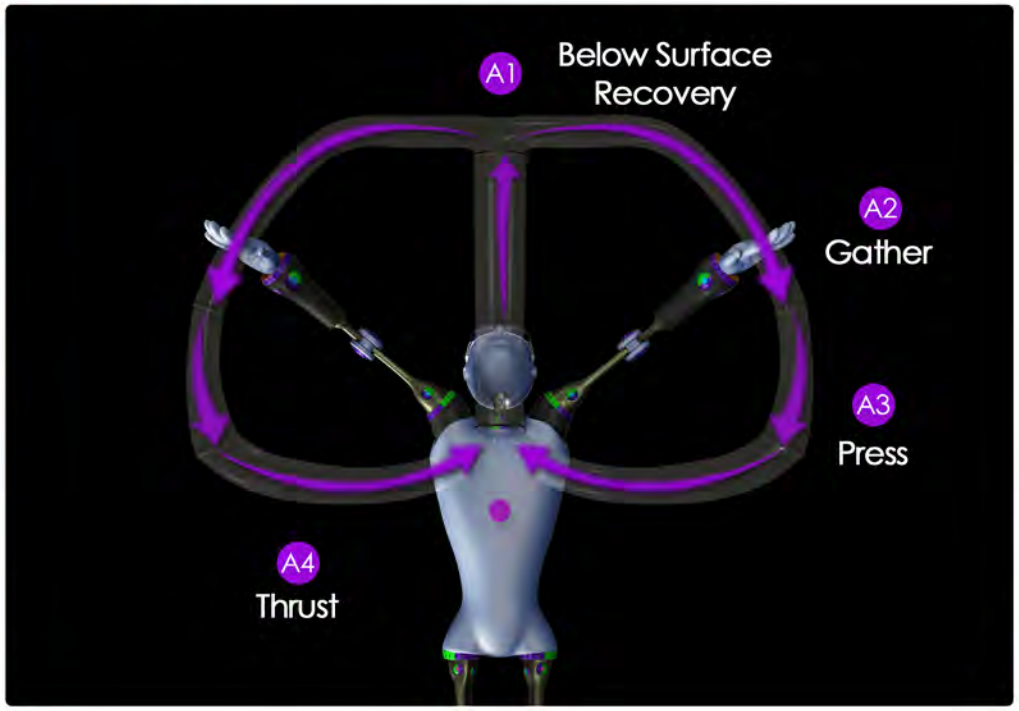


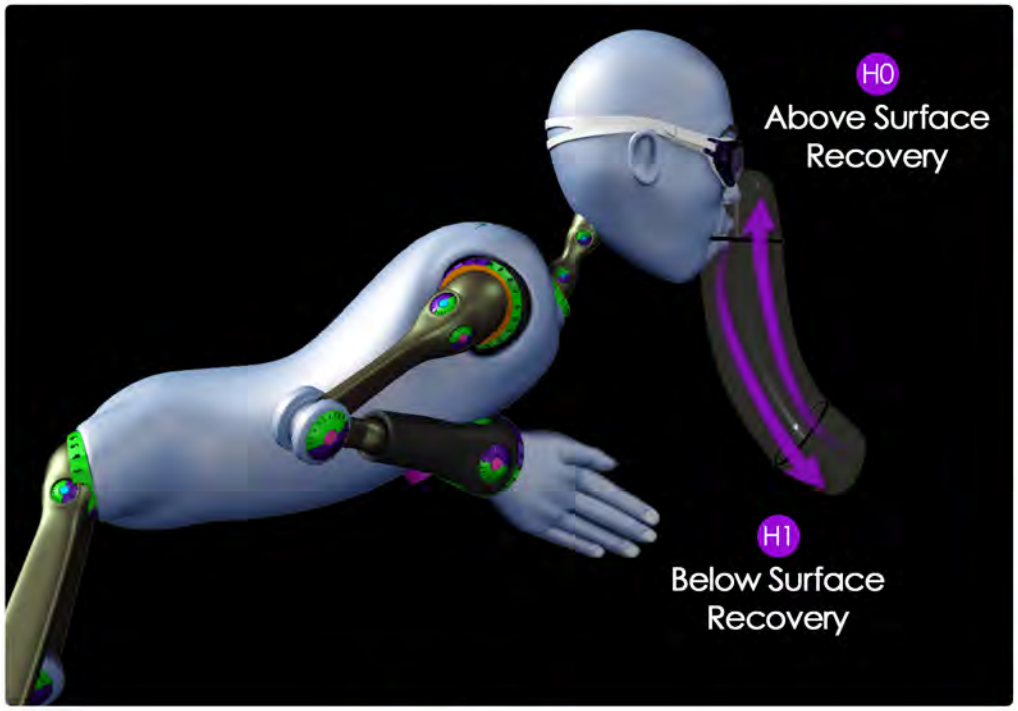
Kick Frequency

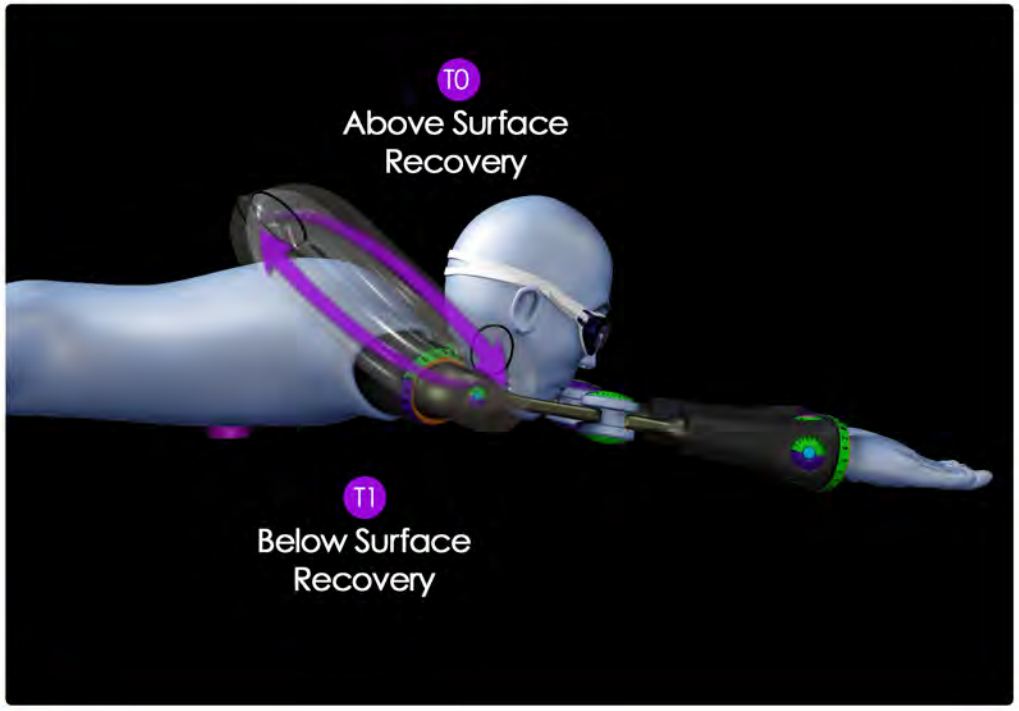
A swimmer should perform 1 breaststroke kick for every arm cycle.

Stroke Map

200 Level







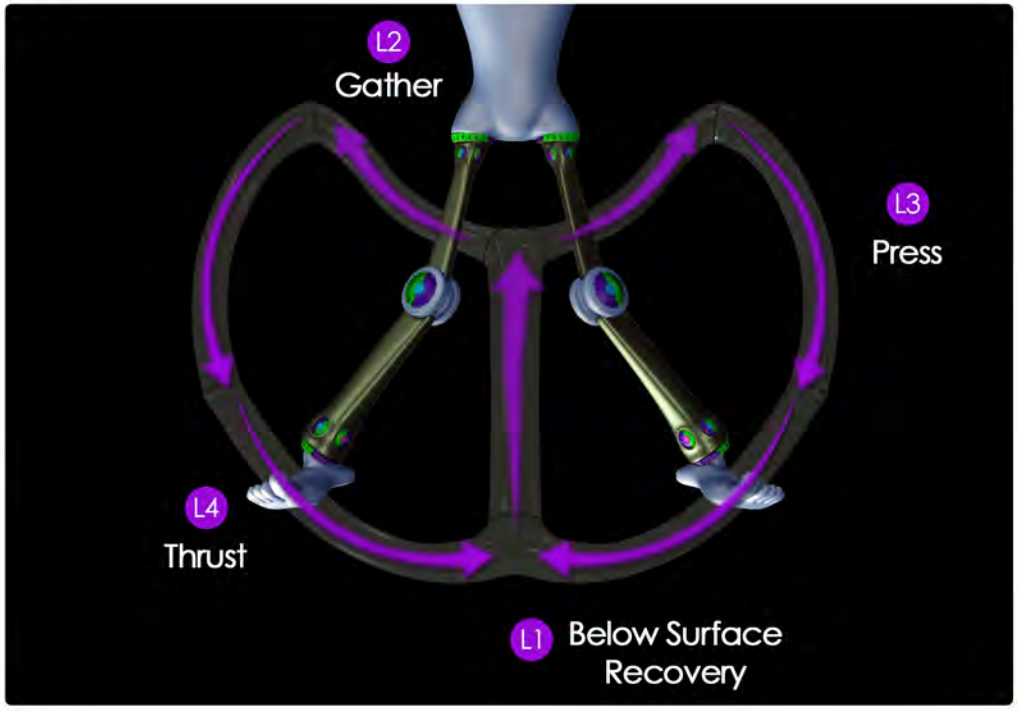


Table of Properties

< From the Point
> To the Point
2T Double Tap
2X Double Take
FF Freeze Frame
STF Single-Take & Freeze

Structure (Blue Printing)

Integration

Control #	1. Key	2. Name	3. Common Terminology	4. Visual	5. Verbal	6. Physical (In-Water)	D2 7. Hydro Dynamics	D3 8. Force	D4 Timing 9. A	10. H	11. T	12. L
1.	A1	Below Surface Recovery	Extension, Reach		< the hands are together below the xyphoid process > the arms are fully extended forward	2X	The arm propellers extend forward and down together creating the pressure field.	The elbows uncoil causing the arms to generate momentum.	A1	H1	T1	L3 - L4
2.	A2	Gather	Beginning the Pull, Outward Scull, Catch, Outsweep		< the arms are fully extended forward > the hands are level with the top of the head	2X	The arm propellers are repositioned onto the front border of the pressure field.	The elbows coil slowly to prepare for A3. A small amount of propulsion is created during this process.	A2	H1 slnt	T1 slnt	L4 slnt
3.	A3	Press	Pulling Backward, Pull, Backsweep		< the hands are level with the top of the head > the hands are level with the xyphoid process and outside the width of the elbows	2X	The arm propellers are pulled backward, pressing on the pressure field, and causing a pressure field stacking effect.	The arm propellers are pressed backward at a moderate speed creating propulsion and setting up for A4.	A3	H0	T0	L4 slnt
4.	A4	Thrust	Inward Scull, Finish, Pull, Hands Together, Insweep		< the hands are level with the xyphoid process outside the width of the elbows > the hands are together below the xyphoid process	2X	The arm propellers push on the outside/ front border of the pressure field using a sculling motion.	The arms scull inward at an accelerated rate.	A4	H0	T0	L4 slnt, L1 - L2
5.	H0	Above Surface Recovery	Breathing, Lifting Head, Head Up		< the head is at its lowest point > the head is at its highest point	2T	The head lifts upward so the mouth is above the surface for inhalation.	As the head is lifted it accelerates to help drag the shoulders backward.	A3 - A4		T0	L4 slnt, L1 - L2
6.	H1	Below Surface Recovery	Putting the Head Back Down		< the head is at its highest point > the head is at its lowest point	2T	The head is extended forward and down into a streamline position to reduce drag.	The head accelerates as it thrusts forward dragging the torso forward and providing power.	A1 - A2		T1	L3 - L4
7.	T0	Above Surface Recovery	Lifting the Shoulders, Arching the Back		< the shoulders are at their lowest point > the shoulders are at their highest point	2T	The torso arches backward allowing the arm propellers to apply greater pressure on the front border of the pressure field.	The torso arches backward in an accelerated manner dragging the arms backward.	A3 - A4	H0		L4 slnt, L1 - L2
8.	T1	Below Surface Recovery	Dropping the Shoulders, Shoulders Forward, Lunging Forward		< the shoulders are at their highest point > the shoulders are at their lowest point	2T	The shoulders are lowered to the bottom of the trough placing the body in a streamline position to reduce drag. In this position the shoulders enable the arm paddles to reach further forward to create a larger pressure field.	The shoulders accelerate as they thrust forward driving the arms forward.	A1 - A2	H1		L3 - L4
9.	L1	Below Surface Recovery	In-Front, Up, Bending the Knees, Bringing the Feet Up, Drawing the Feet In		< the legs are fully extended backward and the feet are together > the knees have reached their greatest bend and the feet are close to the butt	2X	The leg propellers are drawn forward through the tunnel of water to recover the legs for the kick.	The legs are drawn forward toward the butt as the knees coil to set up for L2 and L3.	A4	H0	T0	L1
10.	L2	Gather	Out-Front, Out, Turning Feet Out		< the knees have reached their greatest bend and the feet are close to the butt > the knees have rotated inward and the feet are outside the width of the hips and knees	2X	The knees rotate inward as the feet turn outward to position the leg propellers on the front border of the pressure field.	The knees rotate inward as the feet turn outward to position the legs for L3.	A4	H0	T0	L2
11.	L3	Press	Out-Back, Back, Kicking Back, Backsweep, Extending Back		< the legs begin to press backward > the feet reach their furthest point back and outward	2X	The leg propellers push on the front border of the pressure field causing a pressure field stacking effect.	The knees uncoil driving force through the feet and generating propulsion.	A1	H1	T1	L3
12.	L4	Thrust	In-Back, In, Finish, Legs Together, Feet Together		< the feet are at their furthest point backward and out > the feet are together	2X	The leg propellers scull inward driving off the pressure field.	The legs scull inward at an accelerated rate providing propulsion.	A1 - A3	H1 - H0	T1 - T0	L4

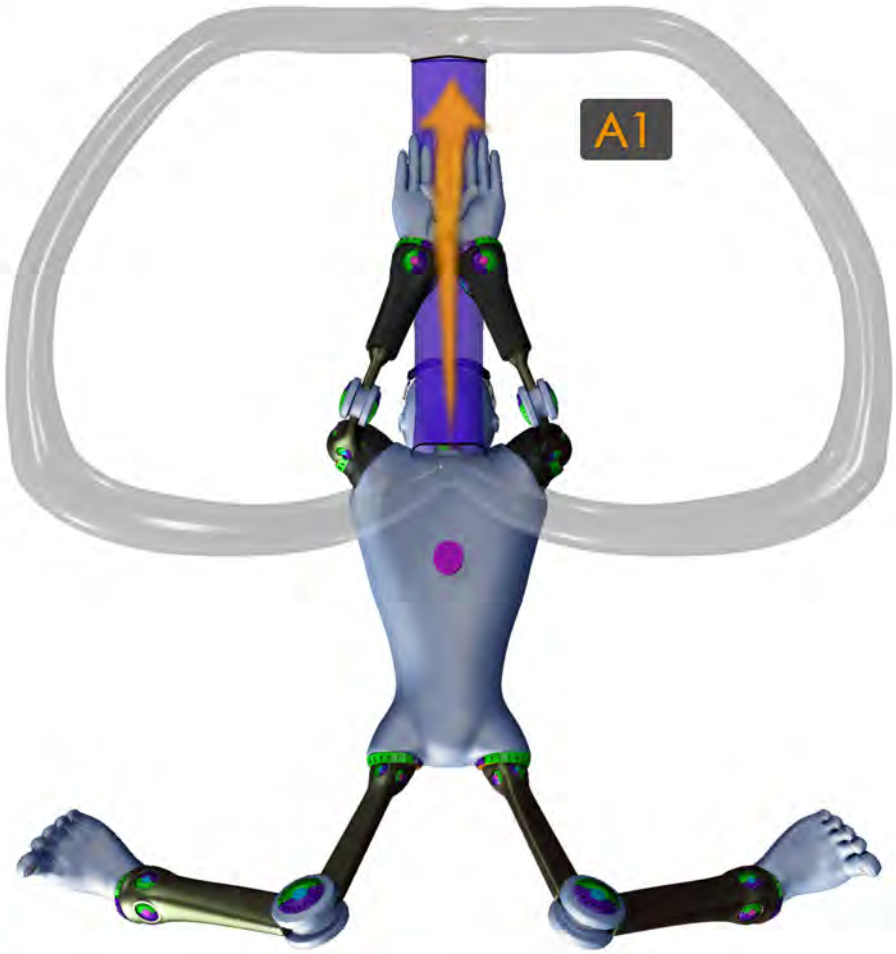
Dimension 1 - Structure

200 Level - Knowledge Builder

A1 Below Surface Recovery

Extension, Reach

The hands are kept together as the arms extend forward and down. The Below Surface Recovery phase is complete when the elbows are fully extended.



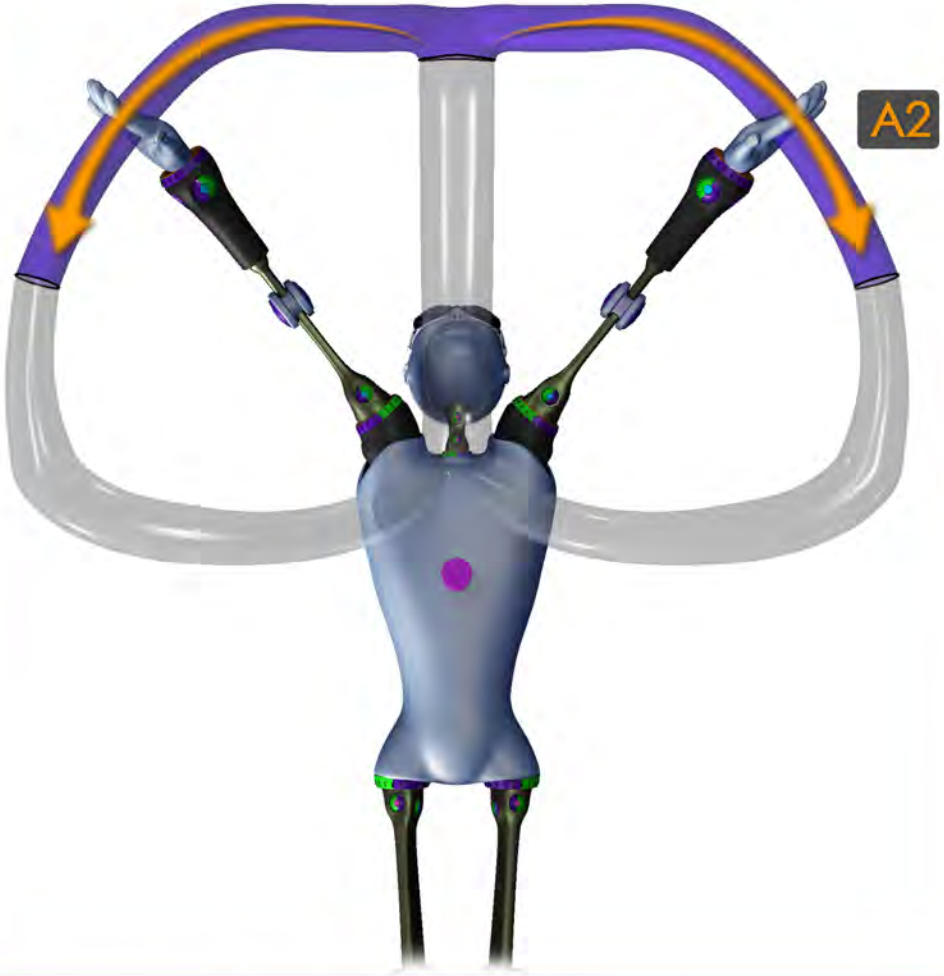
< the hands are together below the xyphoid process
> the arms are fully extended forward

2X Double-take*

A2 Gather

Beginning the Pull, Outward Scull, Catch, Outsweep

The hands and forearms are adjusted from the horizontal plane to the vertical plane early in the pull to form paddles to create propulsion.



< the arms are fully extended forward
> the hands are level with the top of the head

2X Double-take*

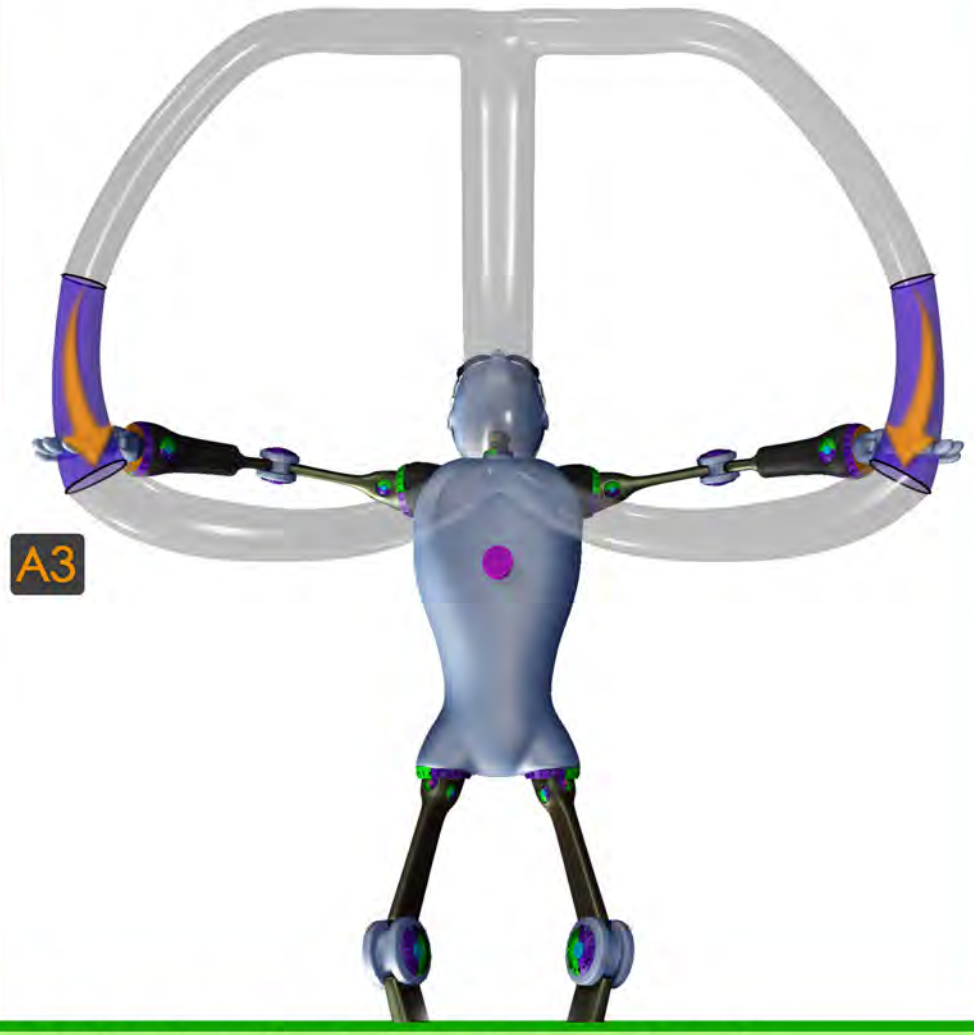
Dimension 1 - Structure

200 Level - Knowledge Builder

A3 Press

Pulling Backward, Pull, Backsweep

The paddles created with the hands and forearms in A2 press the water diagonally out and backward until the hands are level with the xyphoid process.



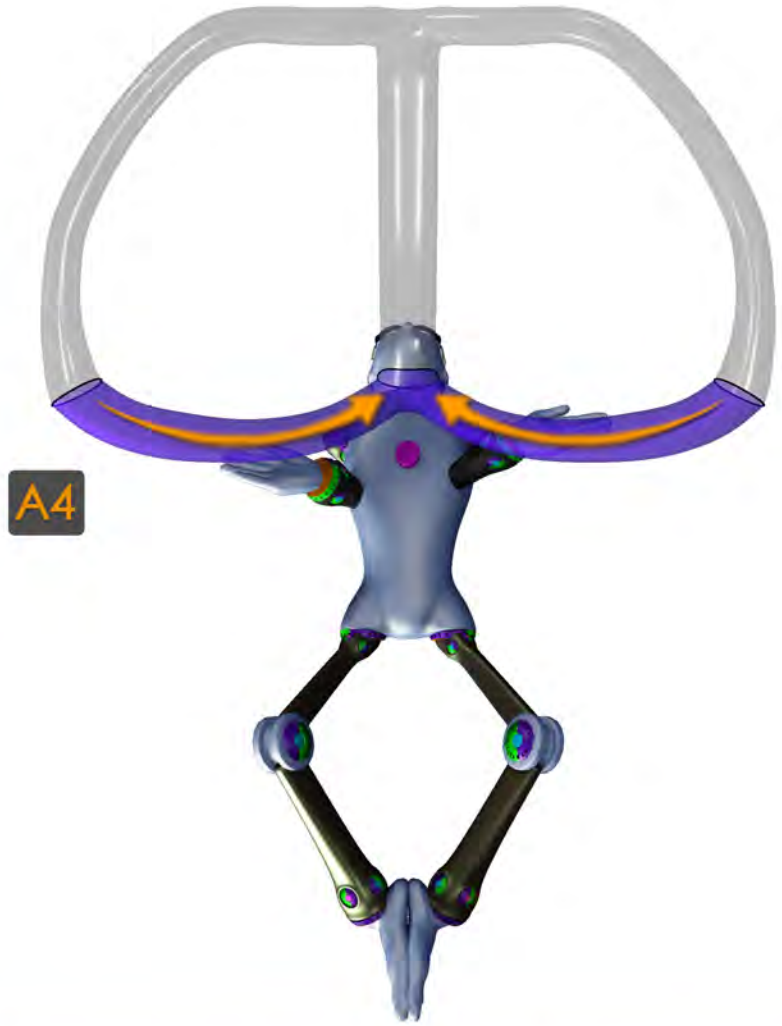
< the hands are level with the top of the head
> the hands are level with the xyphoid process and outside the width of the elbows

2X Double-take*

A4 Thrust

Inward Scull, Finish, Pull, Hands Together, Insweep

The arms sweep inward until the hands come together beneath the xyphoid process.



< the hands are level with the xyphoid process outside the width of the elbows
> the hands are together below the xyphoid process

2X Double-take*

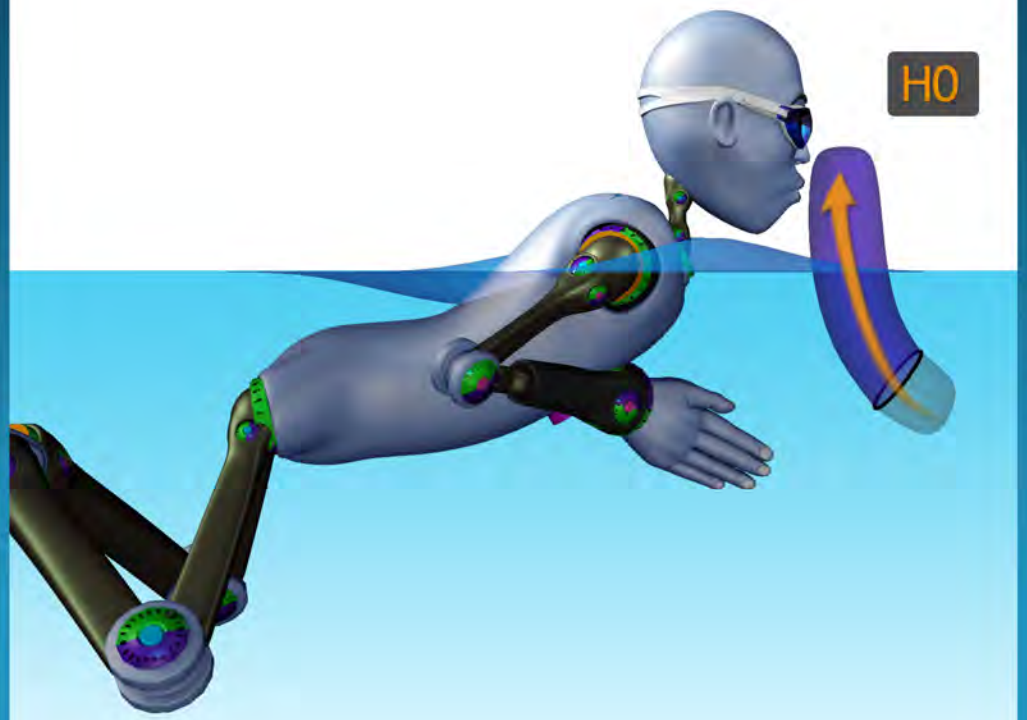
Dimension 1 - Structure

200 Level - Knowledge Builder

H0 Above Surface Recovery

Breathing, Lifting Head, Head Up

The head is lifted until only the chin remains in the water.



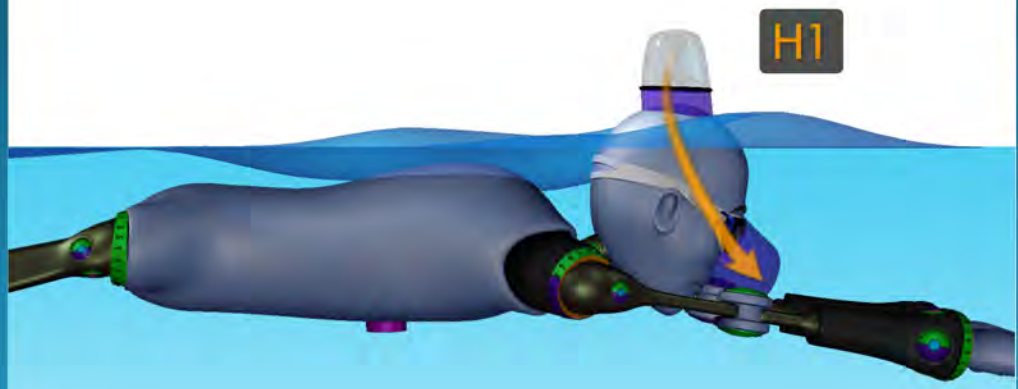
< the head is at its lowest point
> the head is at its highest point

2T Double-tap/Single-take and freeze

H1 Below Surface Recovery

Putting the Head Back Down

The head is thrust forward into the water.



< the head is at its highest point
> the head is at its lowest point

2T Double-tap/Single-take and freeze

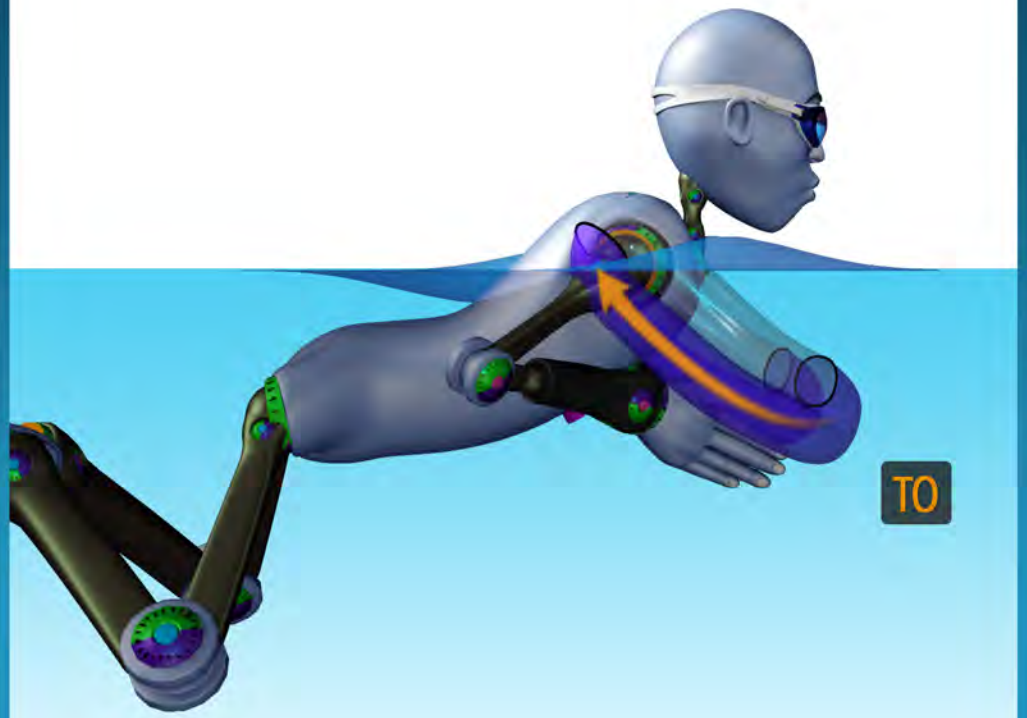
Dimension 1 - Structure

200 Level - Knowledge Builder

T0 Above Surface Recovery

Lifting the Shoulders, Arching the Back

The torso arches backward pulling the arms backward.



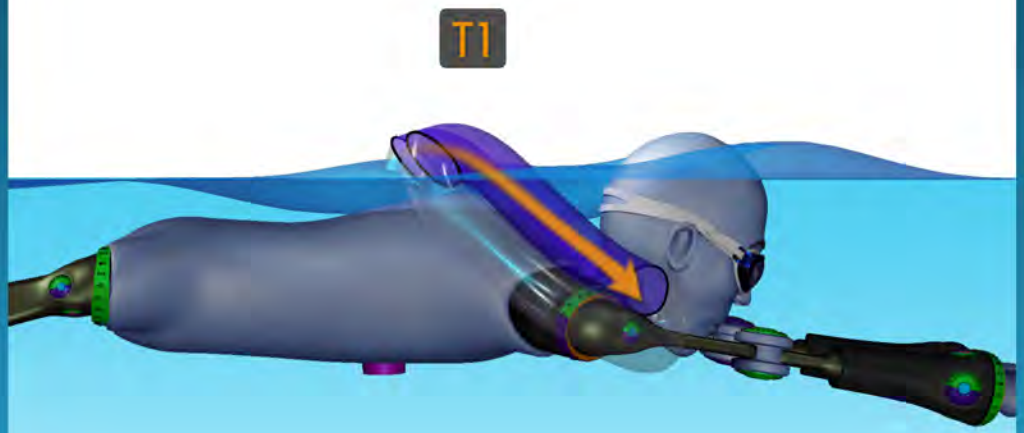
< the shoulders are at their lowest point
> the shoulders are at their highest point

2T Double-tap/Single-take and freeze

T1 Below Surface Recovery

Dropping the Shoulders, Shoulders Forward, Lunging Forward

The shoulders are thrust forward driving the arms forward and down.



< the shoulders are at their highest point
> the shoulders are at their lowest point

2T Double-tap/Single-take and freeze

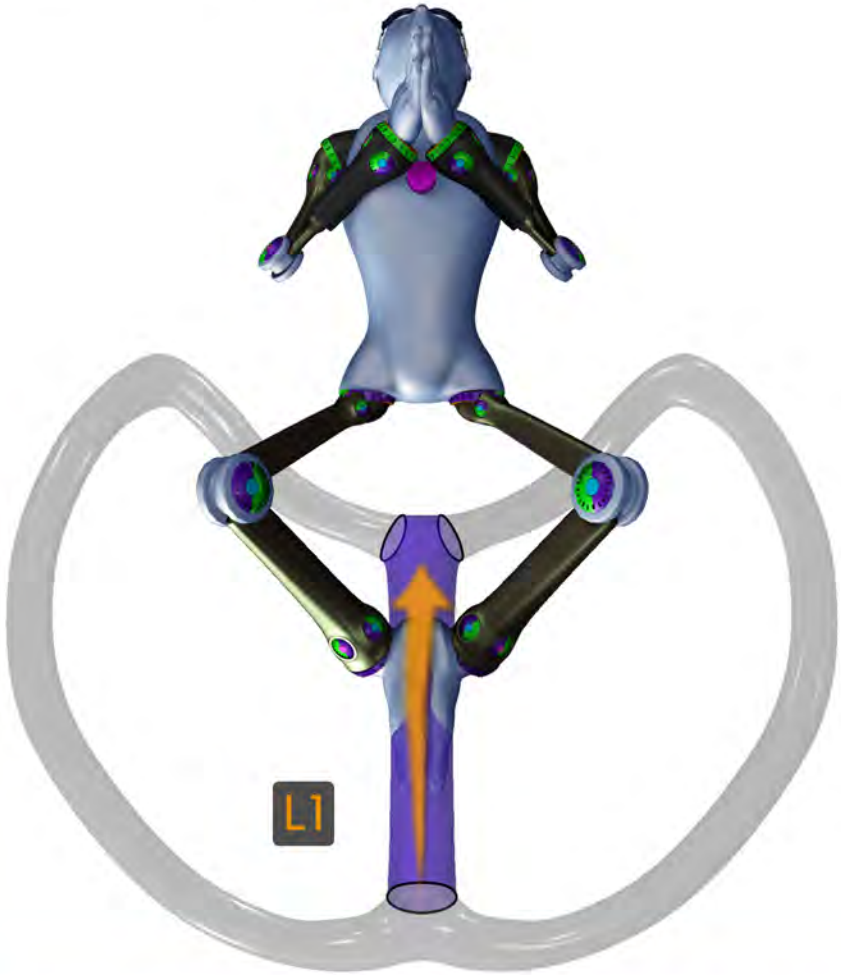
Dimension 1 - Structure

200 Level - Knowledge Builder

L1 Below Surface Recovery

In-Front, Up, Bending the Knees, Bringing the Feet Up, Drawing the Feet In

The feet are drawn forward toward the butt.



< the legs are fully extended backward and the feet are together
> the knees have reached their greatest bend and the feet are close to the butt

2X Double-take*

L2 Gather

Out-Front, Out, Turning Feet Out

The knees are rotated inward placing the feet in an outward position.

< the knees have reached their greatest bend and the feet are close to the butt
> the knees have rotated inward and the feet are outside the width of the hips and knees

2X Double-take*

Dimension 1 - Structure

200 Level - Knowledge Builder

L3 Press

Out-Back, Back, Kicking Back, Backsweep, Extending Back

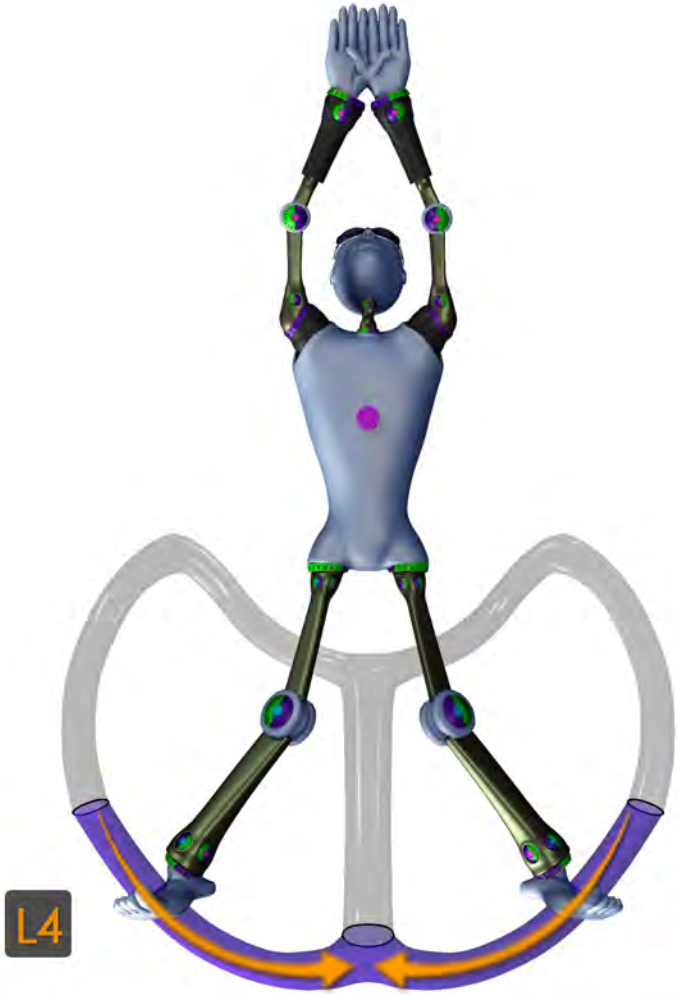
The legs push backward.

< the legs begin to press backward
> the feet reach their furthest point back and outward
2X Double-take*

L4 Thrust

In-Back, In, Finish, Legs Together, Feet Together

The legs sweep inward until they are together.



< the feet are at their furthest point backward and out
> the feet are together
2X Double-take*

Dimension 1 - Structure

200 Level - Memory Builder

1 Key

Fill in the Key for the following controls.

Control #	Key
1.	_____
4.	_____
6.	_____
8.	_____
11.	_____

2 Name

Fill in the corresponding name relating to the Key provided

Key	Name
A2	_____
A4	_____
H1	_____
T0	_____
L3	_____

3 Common Terminology

Fill in the corresponding Common Terminology relating to the Key provided

Key	Common Terminology
A1	_____
A3	_____
H0	_____
T1	_____
L2	_____

4 Verbal Definition

Match the Verbal Definition to the Key provided.

Key	Verbal Definition
A1 •	• < the shoulders are at their highest point > the shoulders are at their lowest point
A3 •	• < the hands are together below the xyphoid process > the arms are fully extended forward
H0 •	• < the legs are fully extended backward and the feet are together > the knees have reached their greatest bend and the feet are close to the butt
T1 •	• < the hands are level with the top of the head > the hands are level with the xyphoid process and outside the width of the elbows
L1 •	• < the head is at its lowest point > the head is at its highest point

5 Key

List the Keys in reverse order (from last control to first).

Control #	Key	Control #	Key
12.	_____	6.	_____
11.	_____	5.	_____
10	_____	4	_____
9.	_____	3.	_____
8.	_____	2.	_____
7.	_____	1.	_____

Dimension 1 - Structure

200 Level - Vision Builder

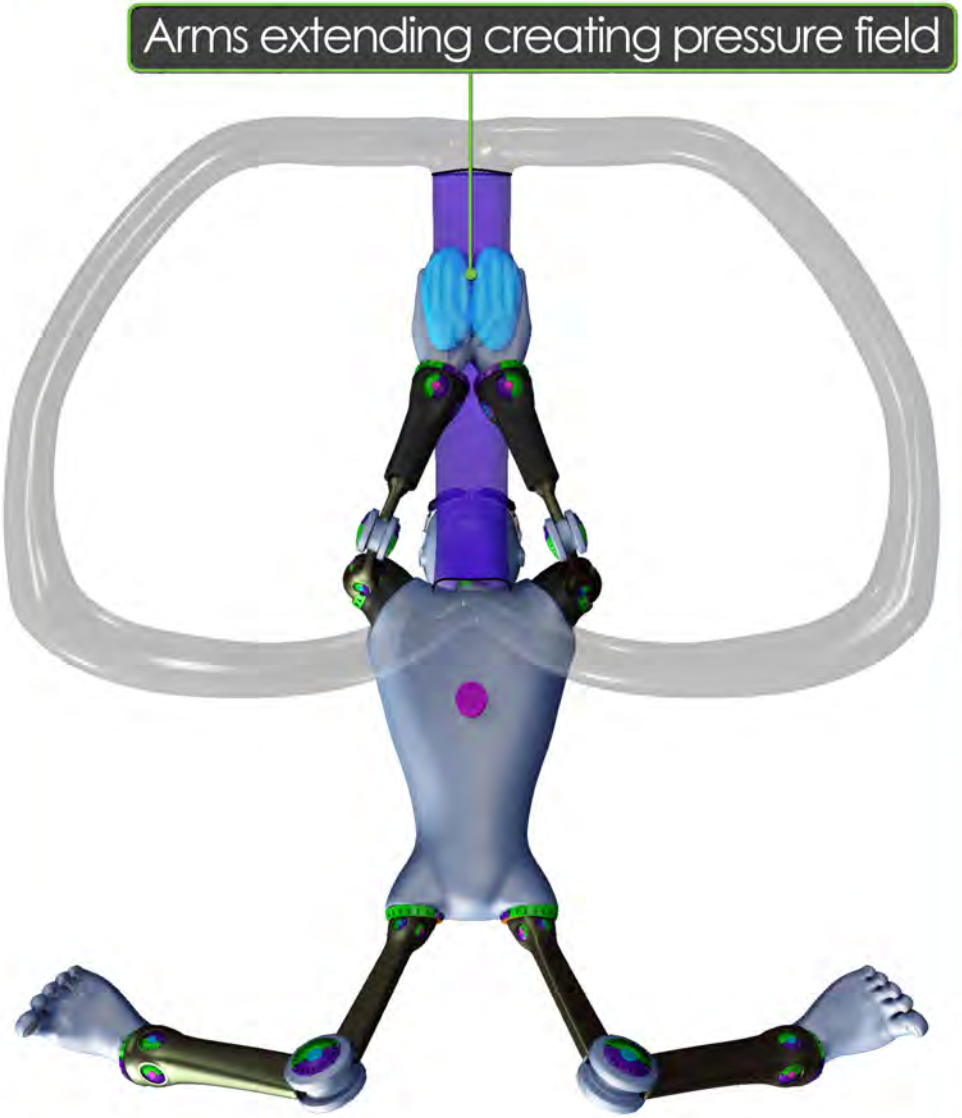
Draw out all of the phases, include Key, Name, Common Terminology and Verbal Definition for each control.

Dimension 2 - Hydro Dynamics

200 Level - Knowledge Builder

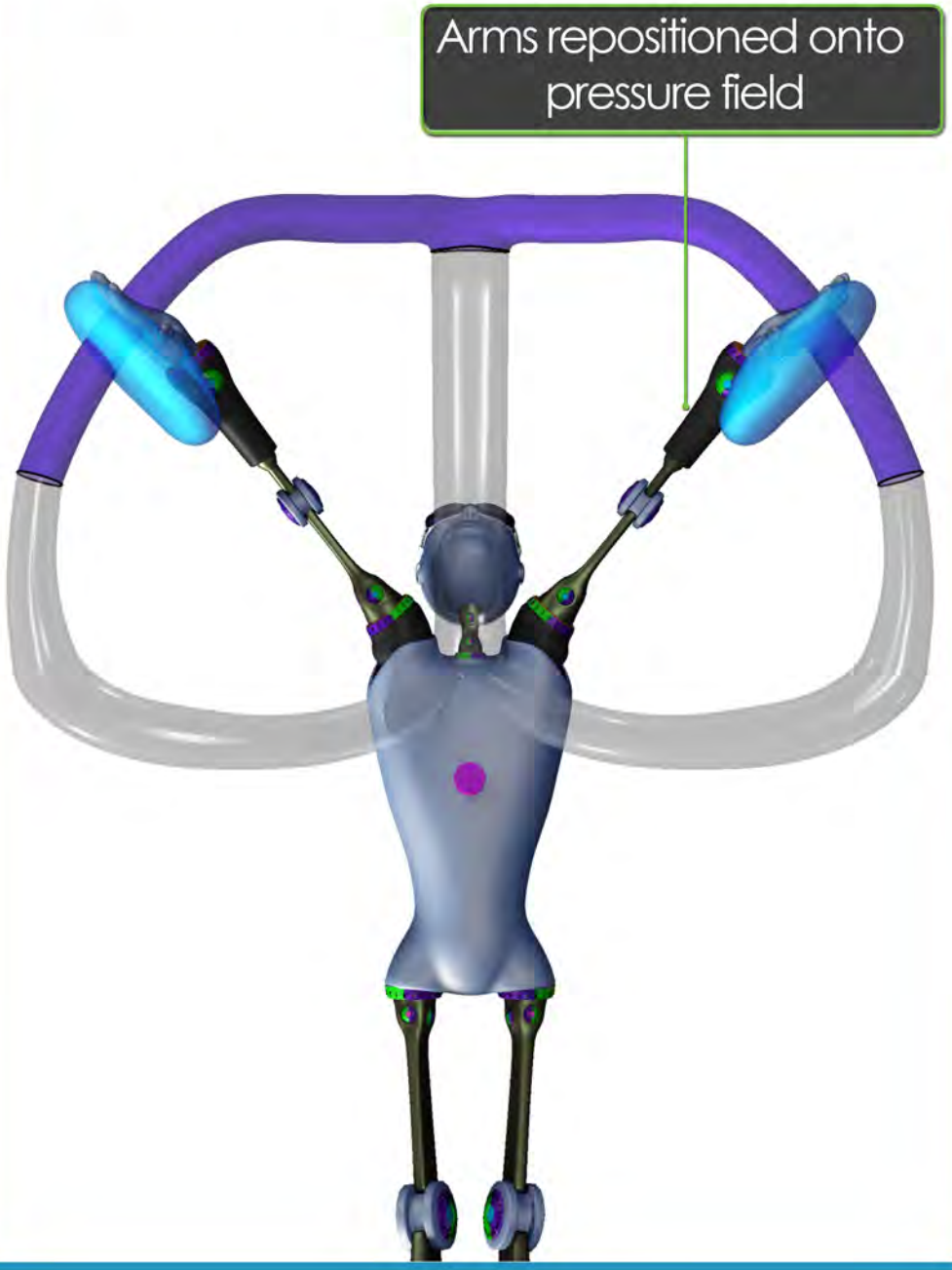
A1 Below Surface Recovery

The arm propellers extend forward and down together creating the pressure field.



A2 Gather

The arm propellers are repositioned onto the front border of the pressure field.

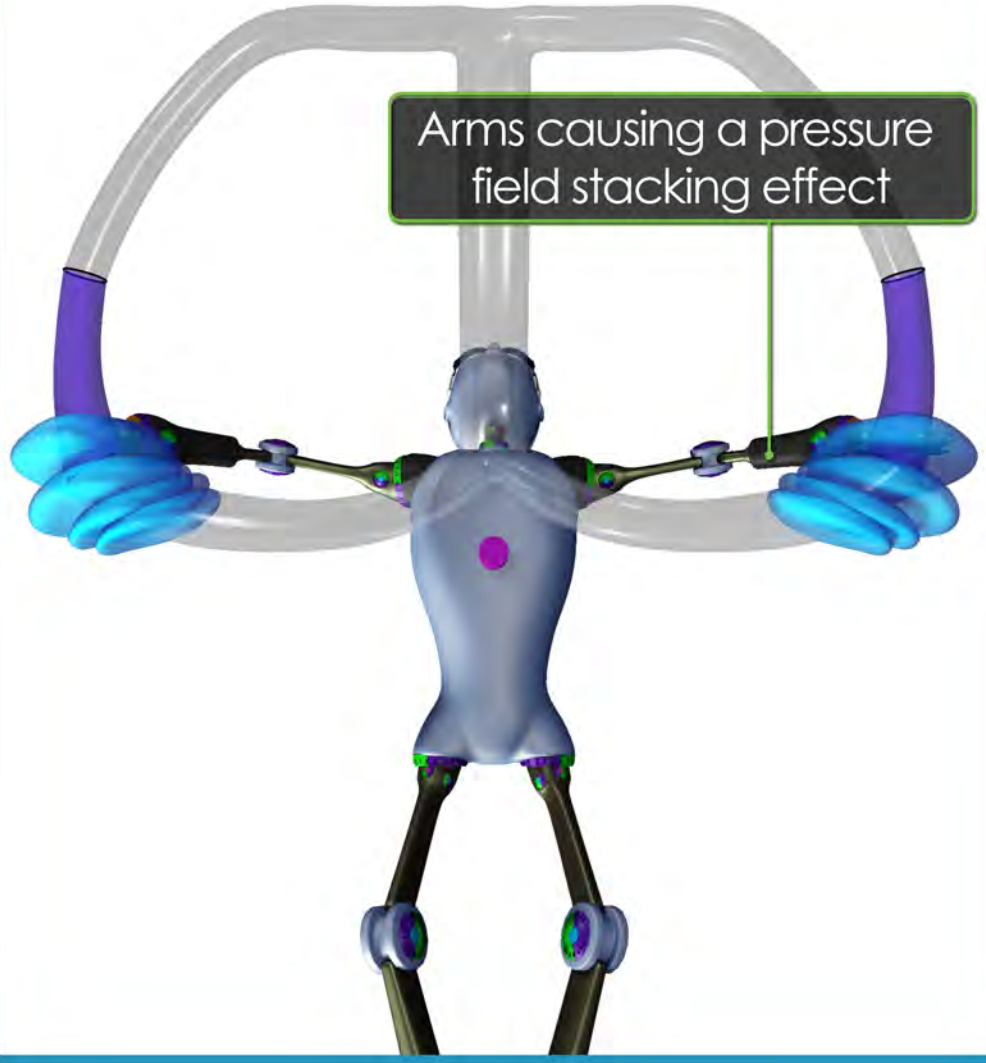


Dimension 2 - Hydro Dynamics

200 Level - Knowledge Builder

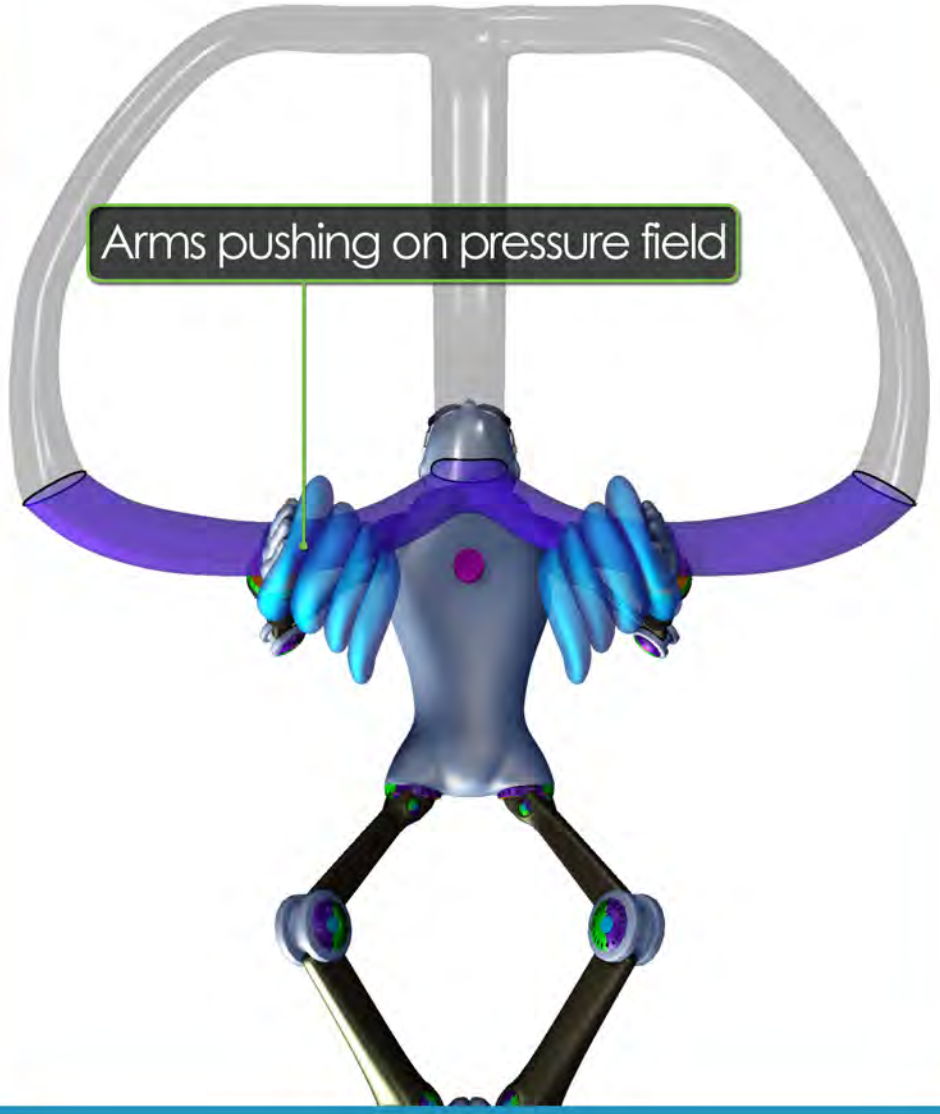
A3 Press

The arm propellers are pulled backward, pressing on the pressure field, and causing a pressure field stacking effect.



A4 Thrust

The arm propellers push on the outside/front border of the pressure field using a sculling motion.

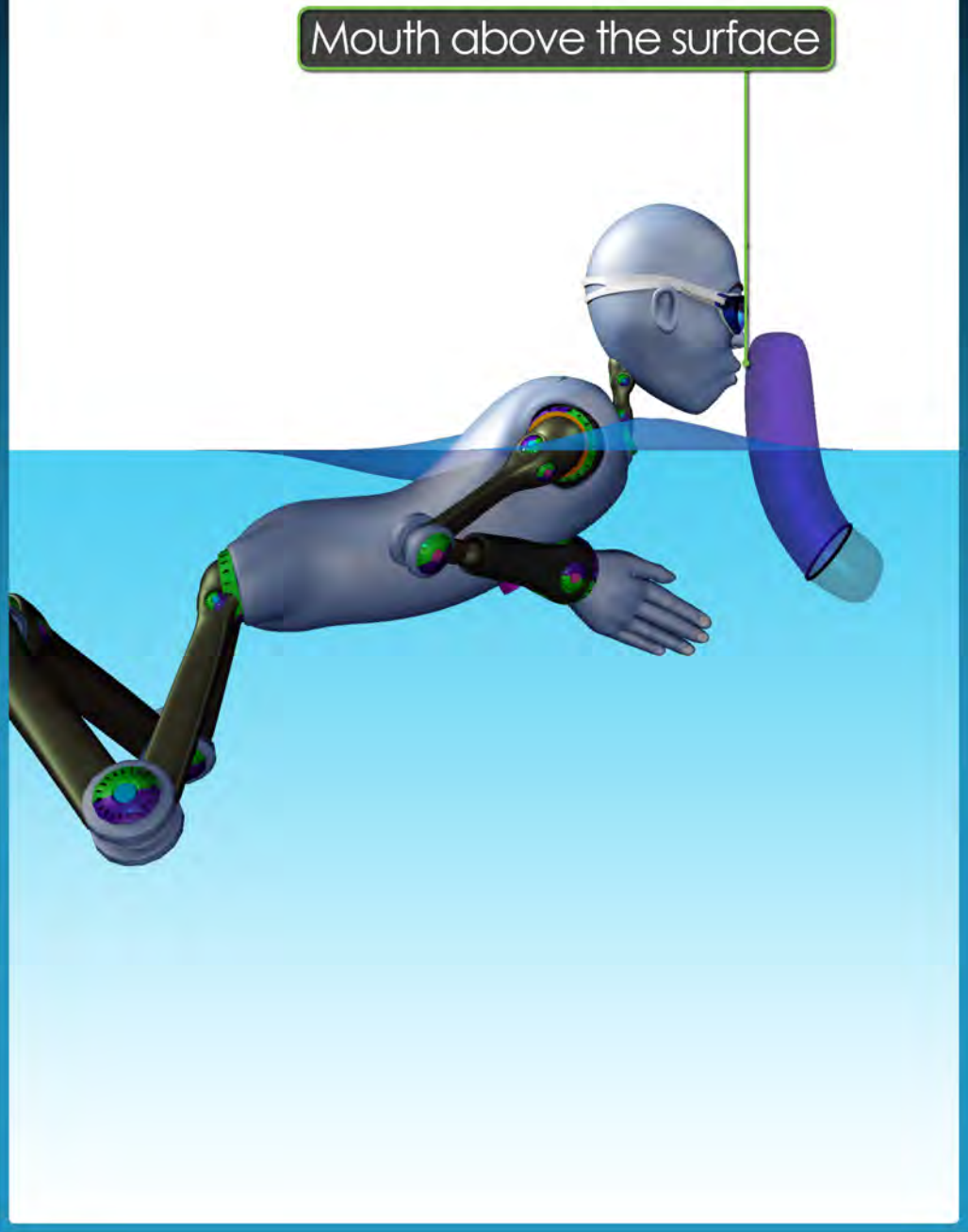


Dimension 2 - Hydro Dynamics

200 Level - Knowledge Builder

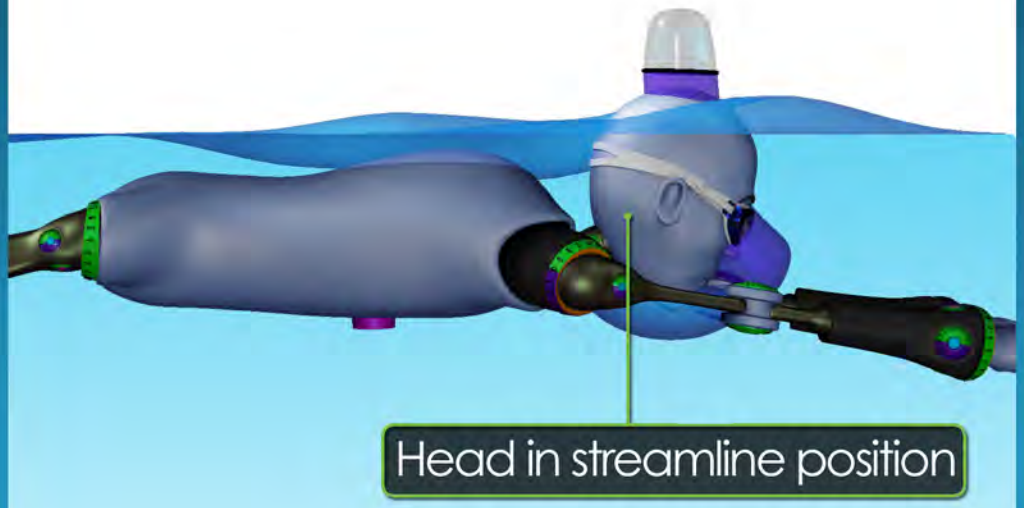
H0 Above Surface Recovery

The head lifts upward so the mouth is above the surface for inhalation.



H1 Below Surface Recovery

The head is extended forward and down into a streamline position to reduce drag.

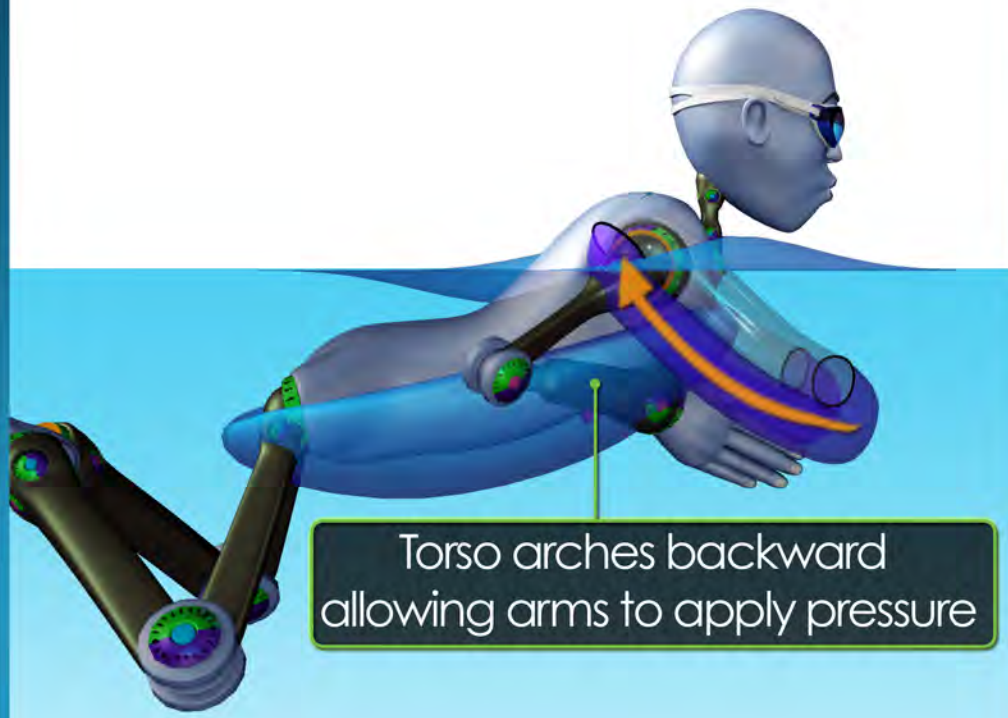


Dimension 2 - Hydro Dynamics

200 Level - Knowledge Builder

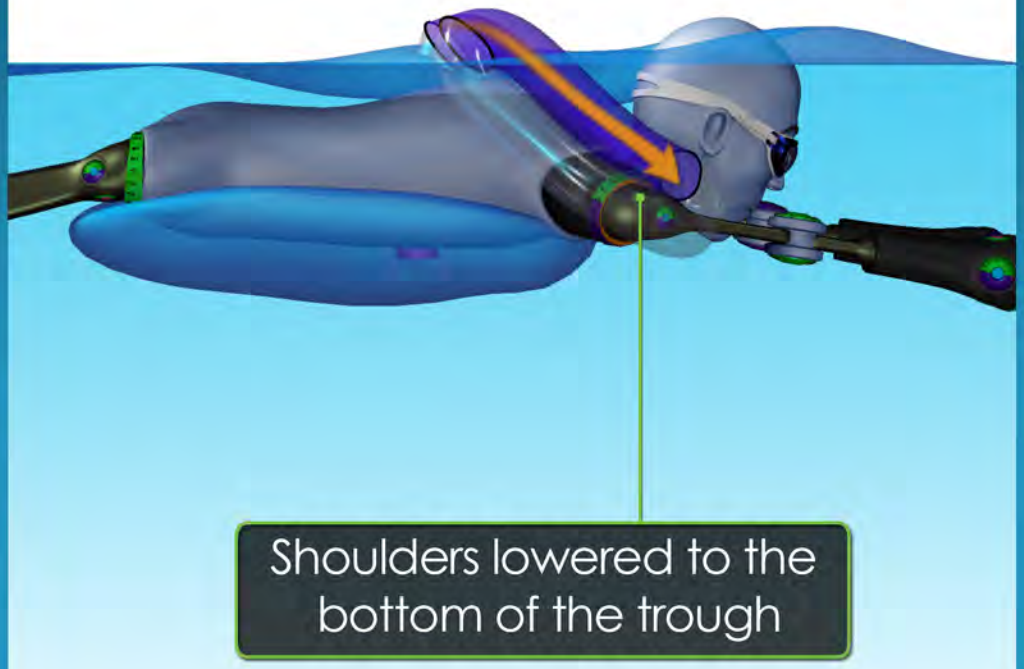
T0 Above Surface Recovery

The torso arches backward allowing the arm propellers to apply greater pressure on the front border of the pressure field.



T1 Below Surface Recovery

The shoulders are lowered to the bottom of the trough placing the body in a streamline position to reduce drag. In this position the shoulders enable the arm paddles to reach further forward to create a larger pressure field.

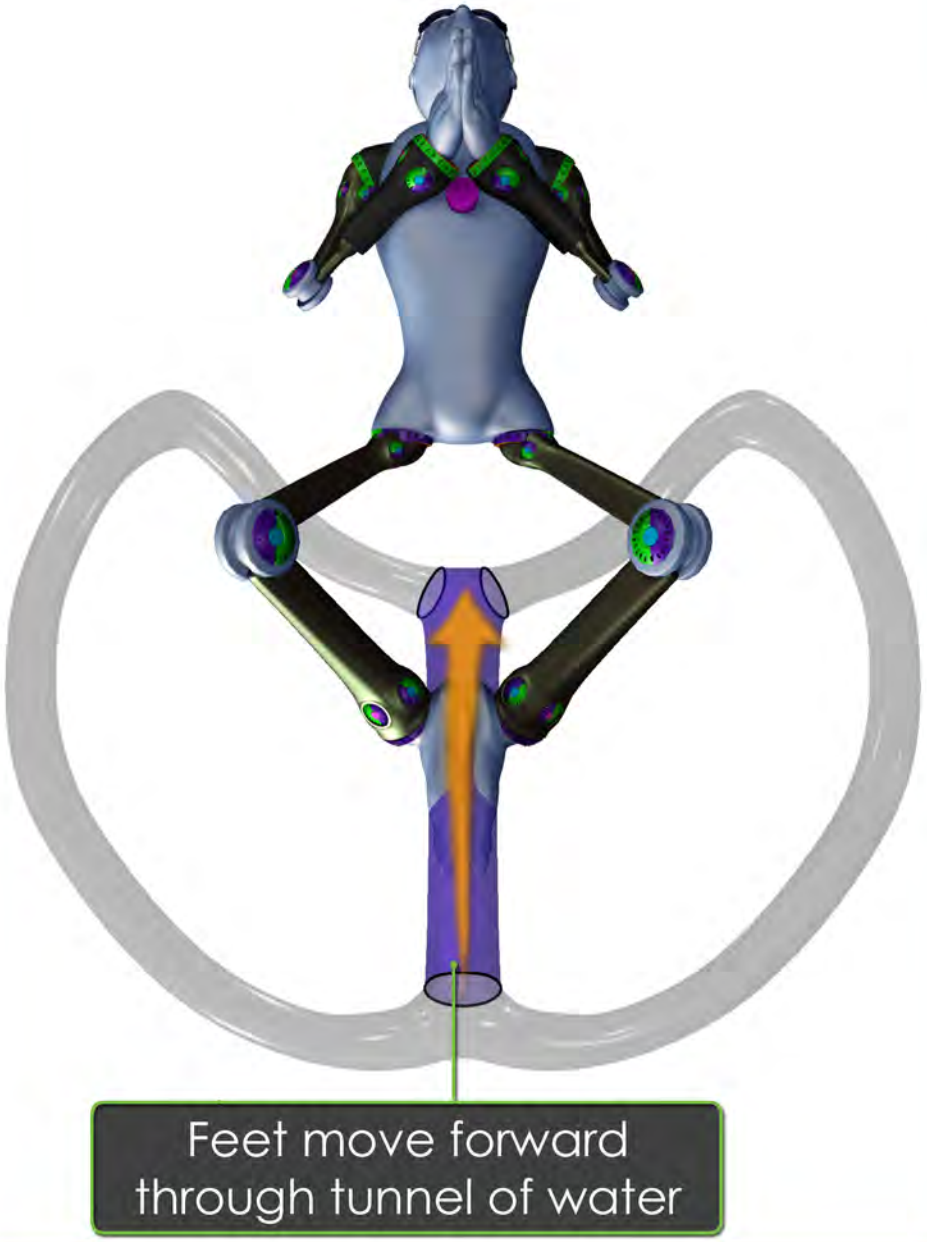


Dimension 2 - Hydro Dynamics

200 Level - Knowledge Builder

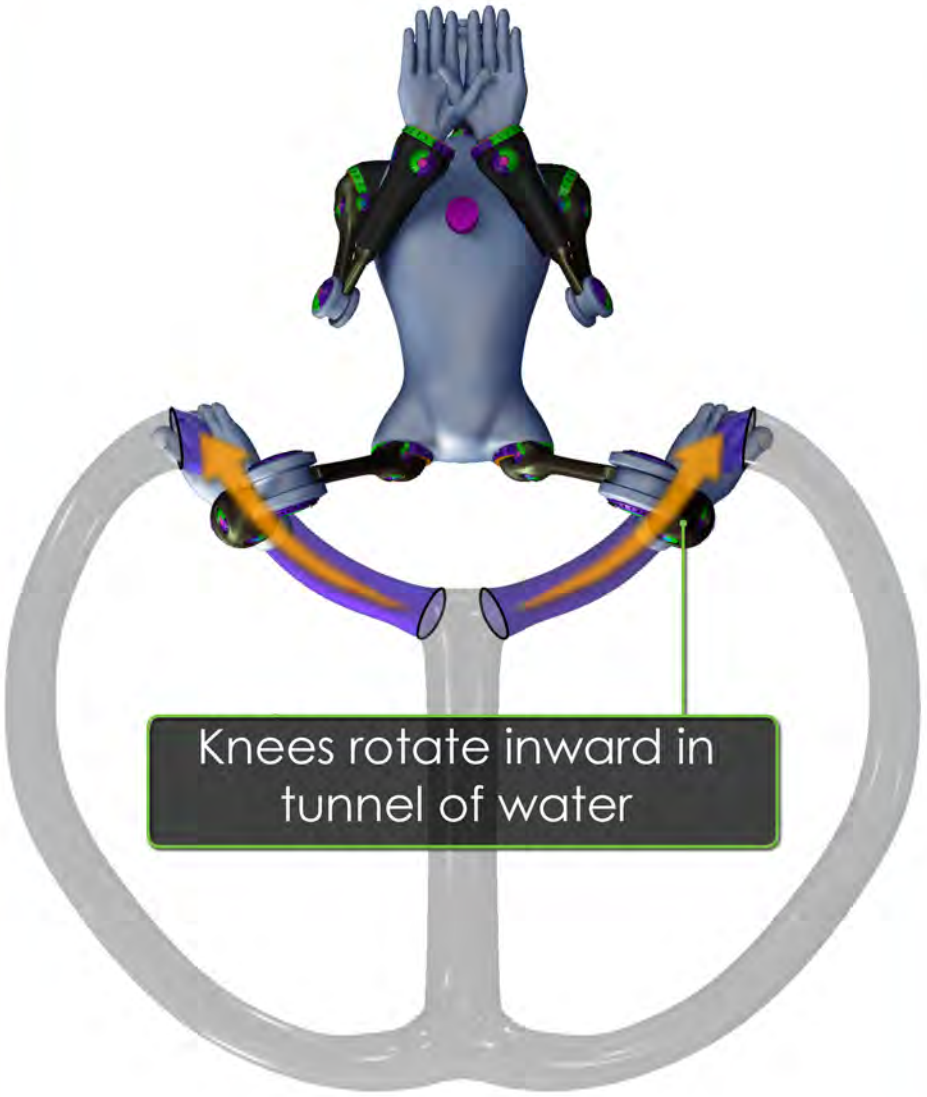
L1 Below Surface Recovery

The leg propellers are drawn forward through the tunnel of water to recover the legs for the kick.



L2 Gather

The knees rotate inward as the feet turn outward to position the leg propellers on the front border of the pressure field.



Dimension 2 - Hydro Dynamics

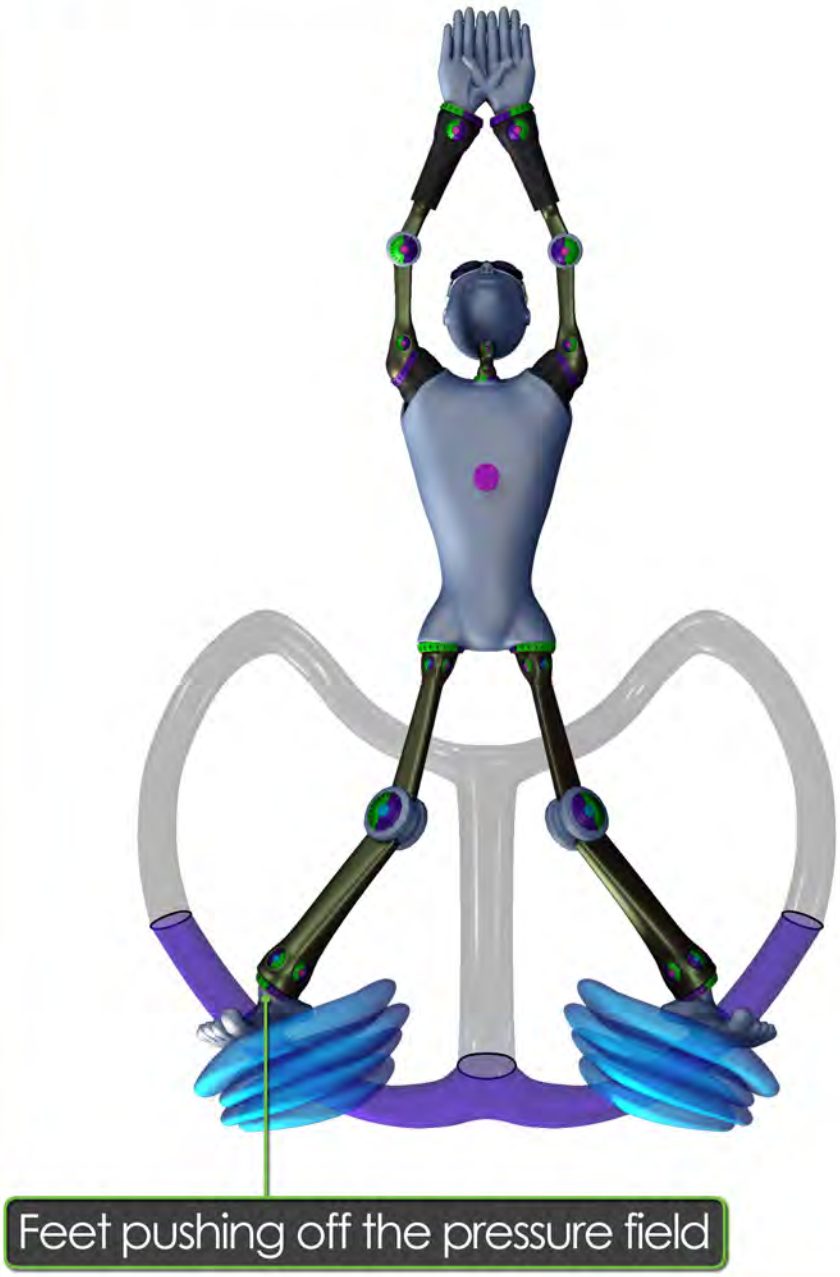
200 Level - Knowledge Builder

L3 Press

The leg propellers push on the front border of the pressure field causing a pressure field stacking effect.

L4 Thrust

The leg propellers scull inward driving off the pressure field.



Dimension 2 - Hydro Dynamics

200 Level - Memory Builder

1 A1

Describe the Hydro Dynamic relationship to this control.

2 A2

Describe the Hydro Dynamic relationship to this control.

3 A3

Describe the Hydro Dynamic relationship to this control.

4 A4

Describe the Hydro Dynamic relationship to this control.

5 H1

Describe the Hydro Dynamic relationship to this control.

6 L3

Describe the Hydro Dynamic relationship to this control.

Dimension 2 - Hydro Dynamics

200 Level - Vision Builder

Draw out all of the phases, include Key and Hydro Dynamic relationship for each control.

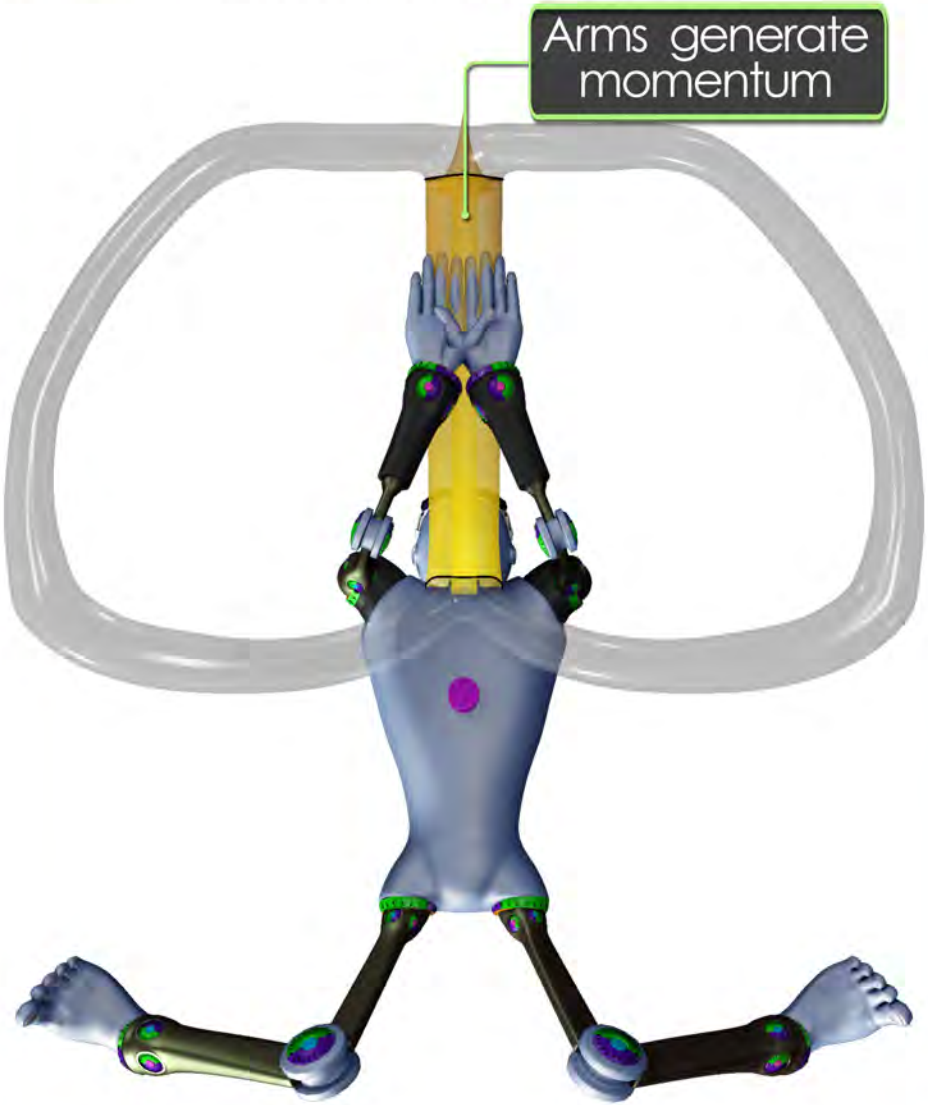
Dimension 3 - Force

200 Level - Knowledge Builder

A1 Below Surface Recovery

Momentum

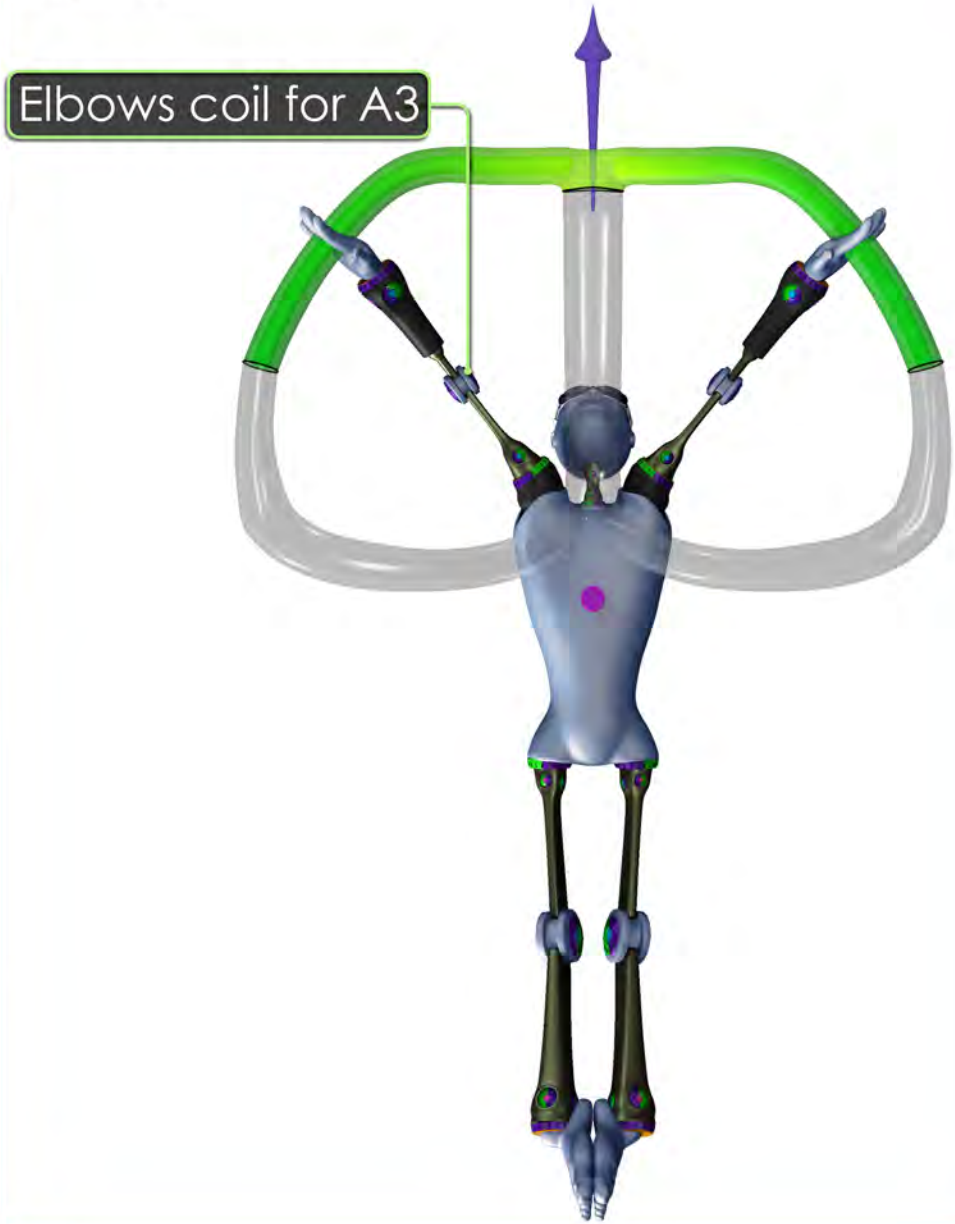
The elbows uncoil causing the arms to generate momentum.



A2 Gather

Setup

The elbows coil slowly to prepare for A3. A small amount of propulsion is created during this process.



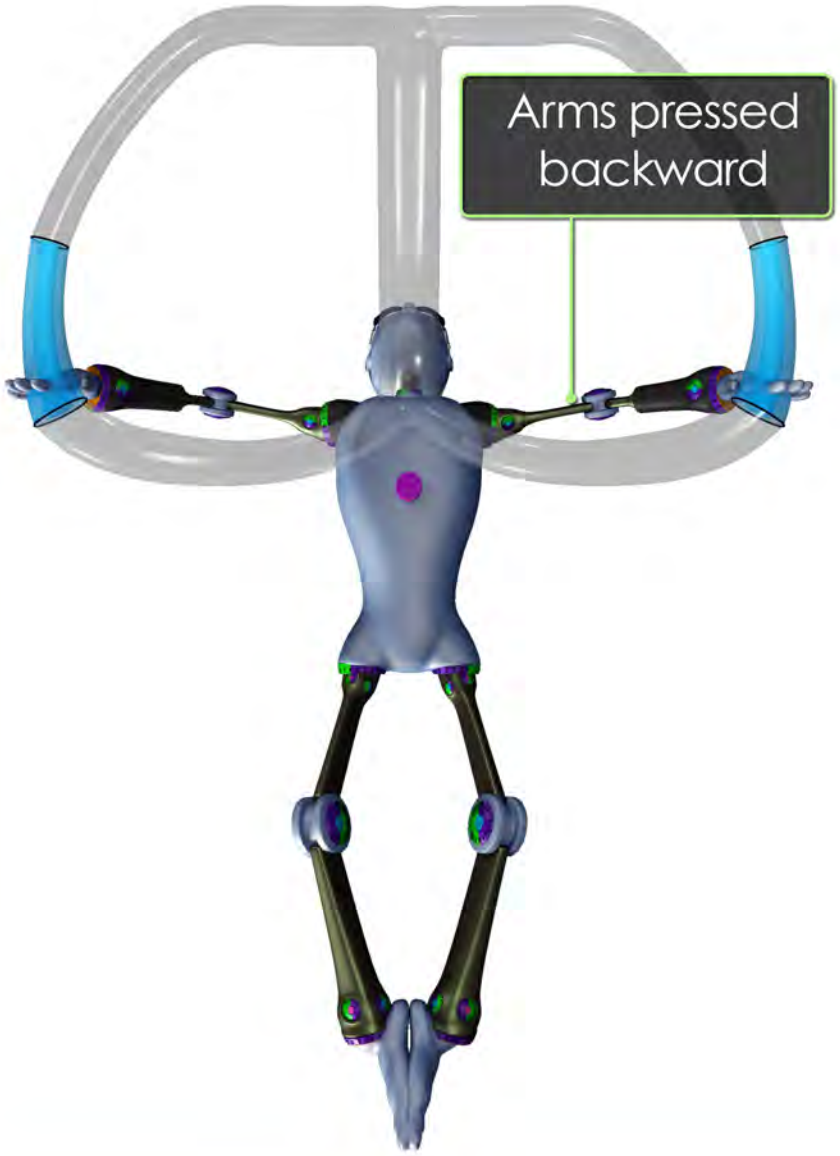
Dimension 3 - Force

200 Level - Knowledge Builder

A3 Press

Propulsion

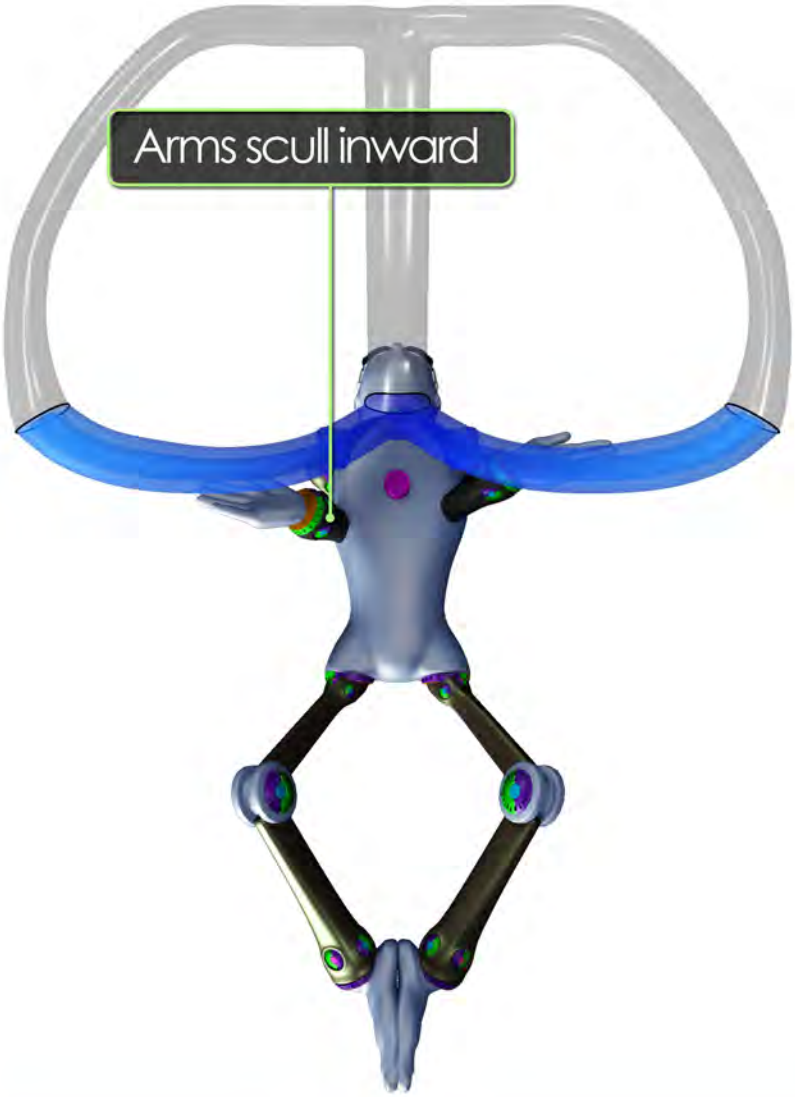
The arm propellers are pressed backward at a moderate speed creating propulsion and setting up for A4.



A4 Thrust

Propulsion

The arms scull inward at an accelerated rate.



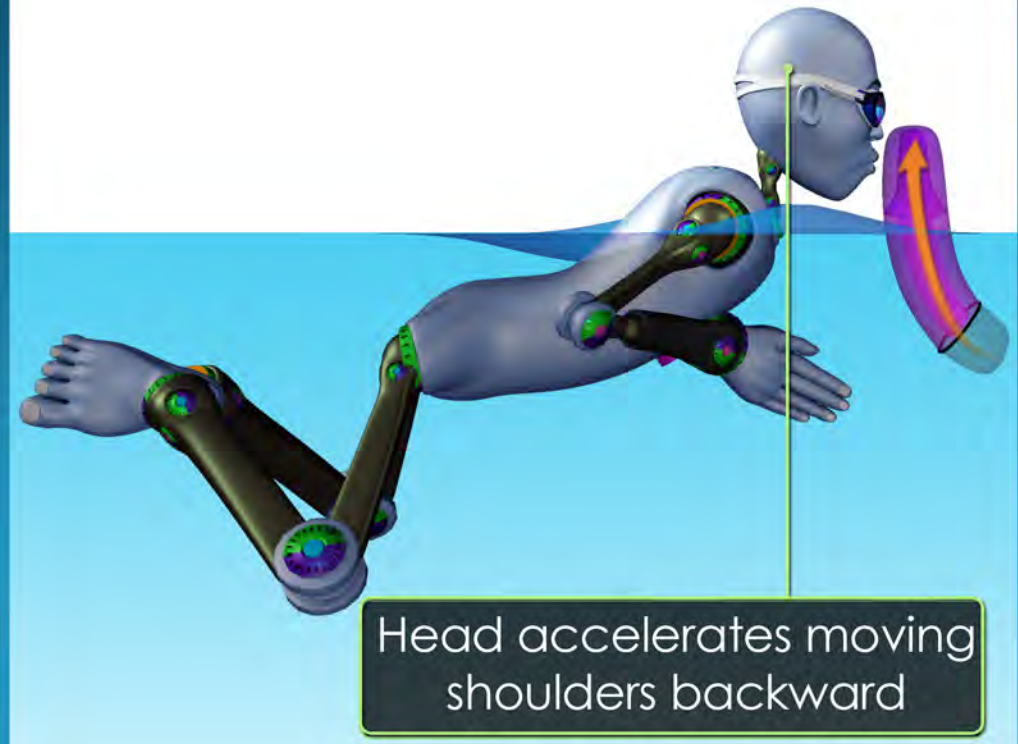
Dimension 3 - Force

200 Level - Knowledge Builder

H0 Above Surface Recovery

Power

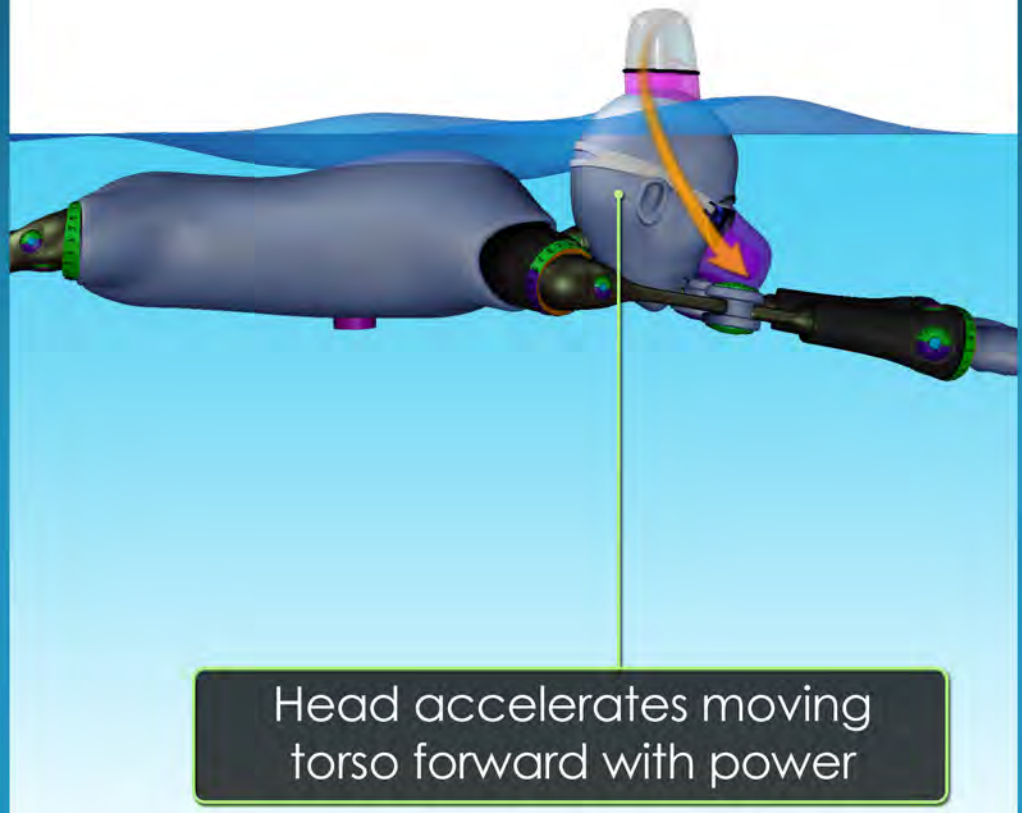
As the head is lifted it accelerates to help drag the shoulders backward.



H1 Below Surface Recovery

Power

The head accelerates as it thrusts forward dragging the torso forward and providing power.



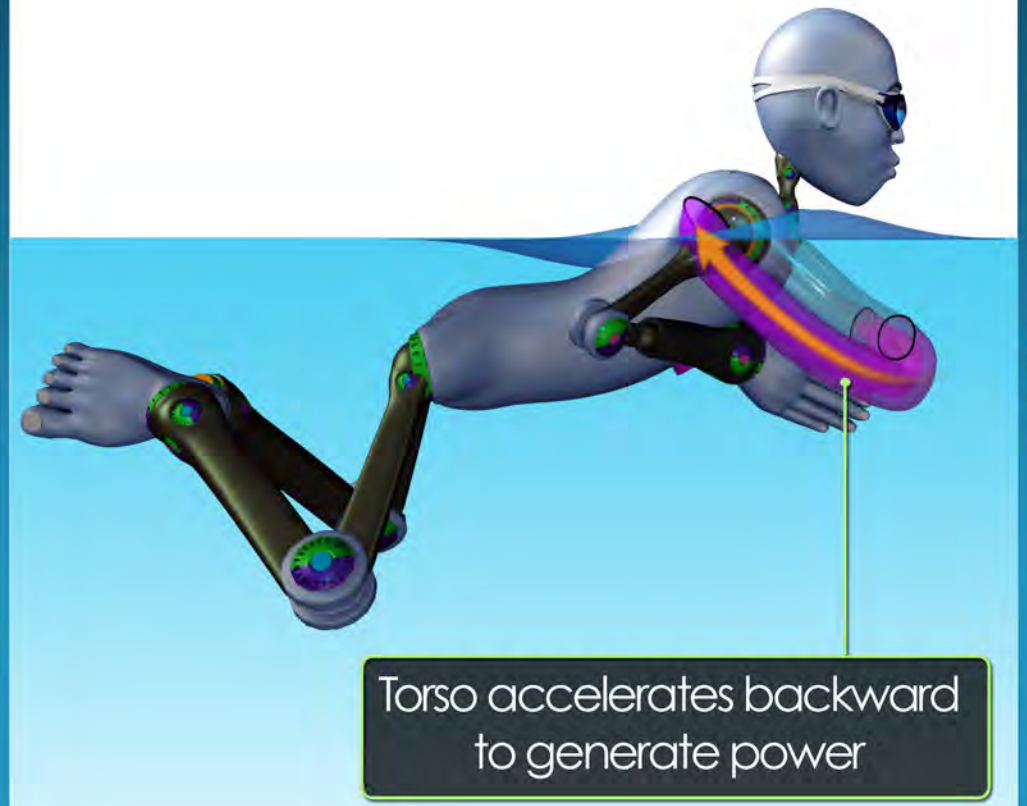
Dimension 3 - Force

200 Level - Knowledge Builder

T0 Above Surface Recovery

Power

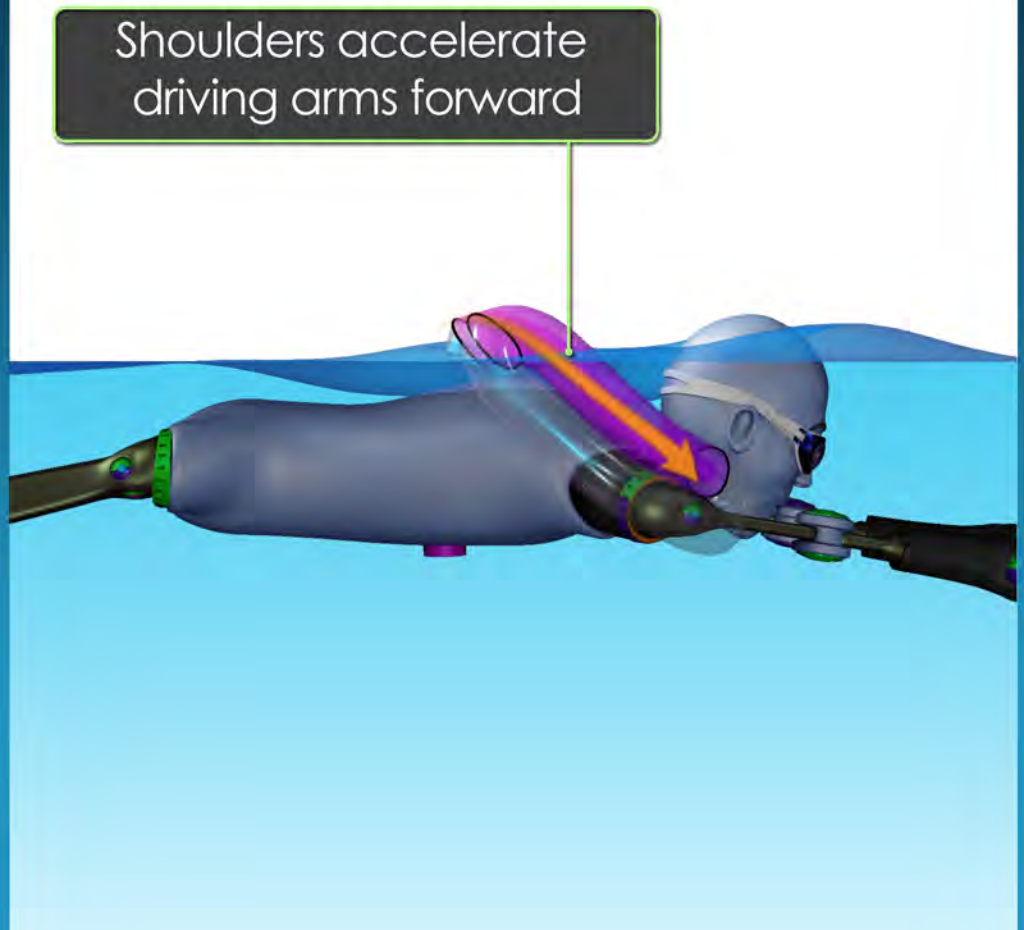
The torso arches backward in an accelerated manner dragging the arms backward.



T1 Below Surface Recovery

Power

The shoulders accelerate as they thrust forward driving the arms forward.



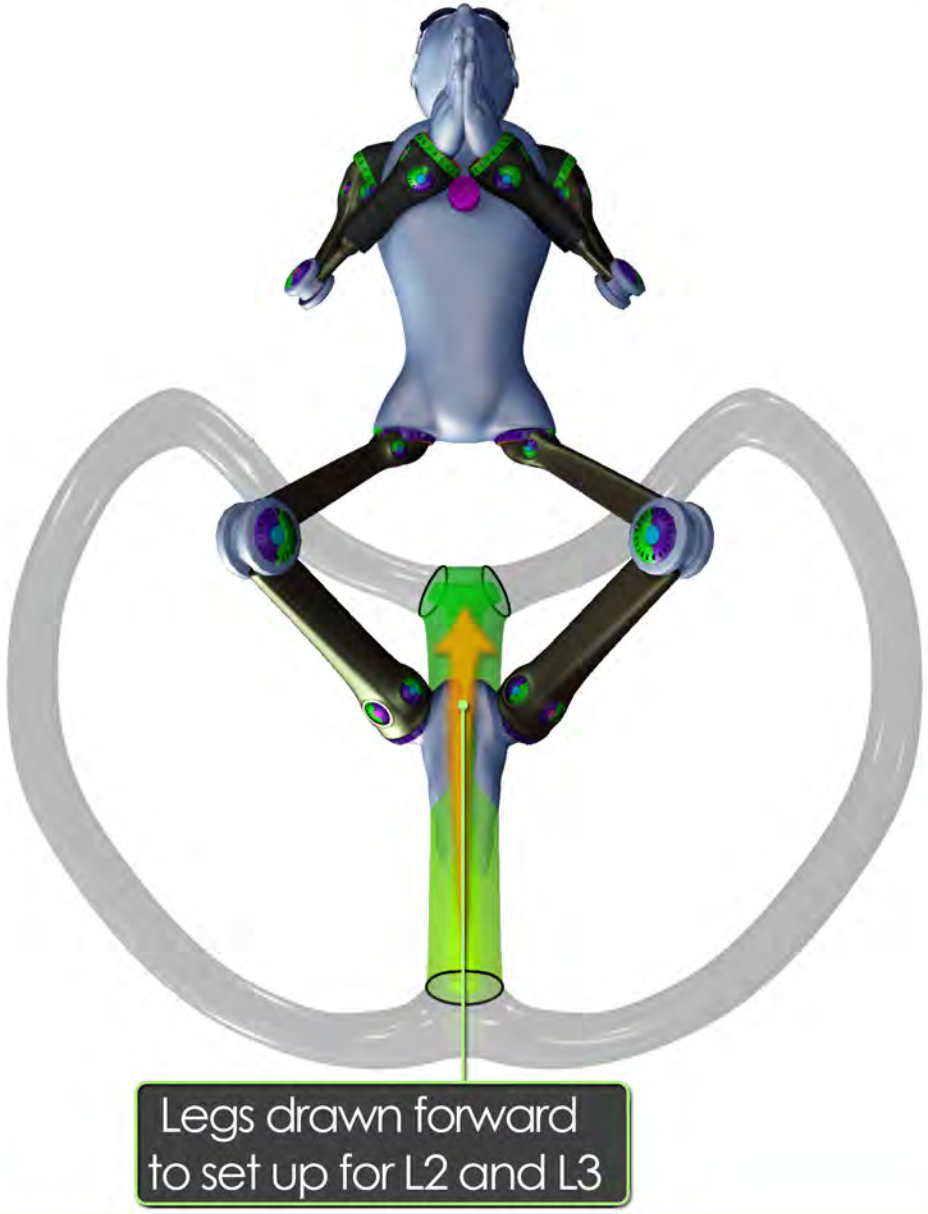
Dimension 3 - Force

200 Level - Knowledge Builder

L1 Below Surface Recovery

Setup

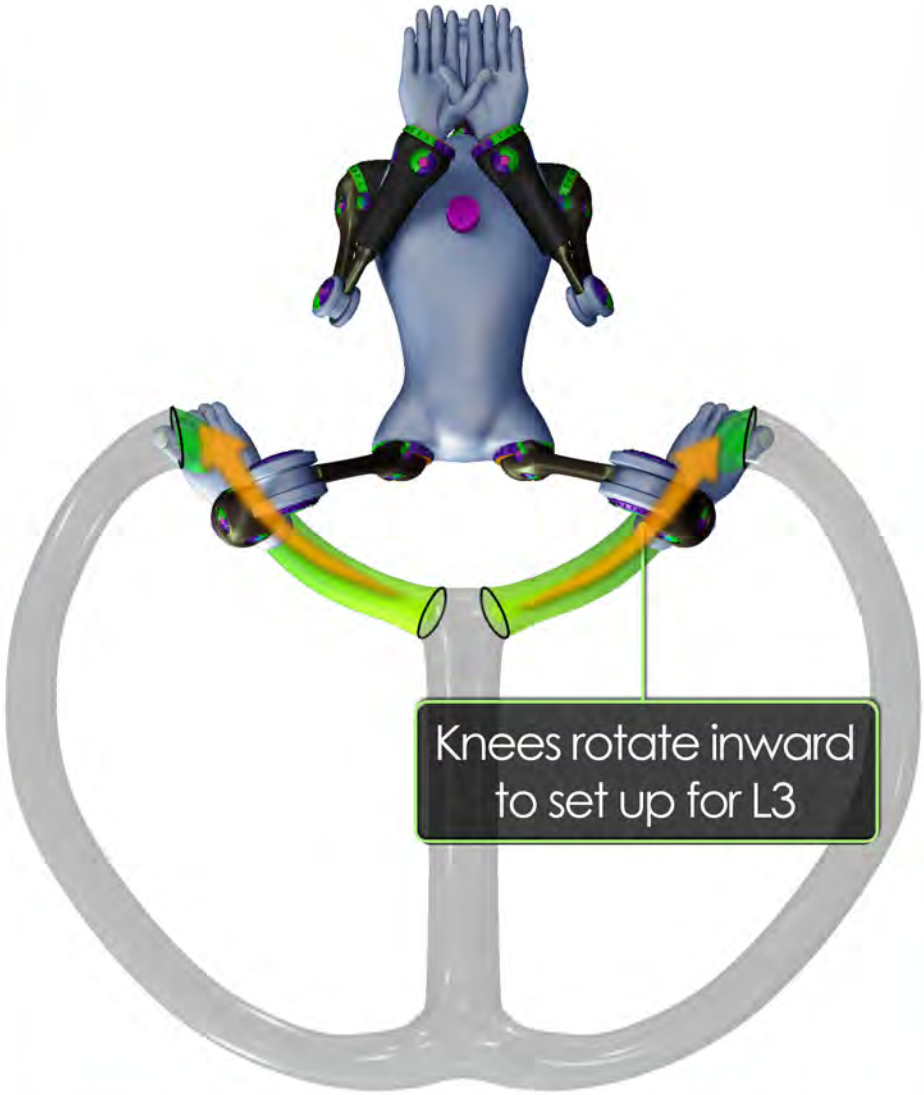
The legs are drawn forward toward the butt as the knees coil to set up for L2 and L3.



L2 Gather

Setup

The knees rotate inward as the feet turn outward to position the legs for L3.



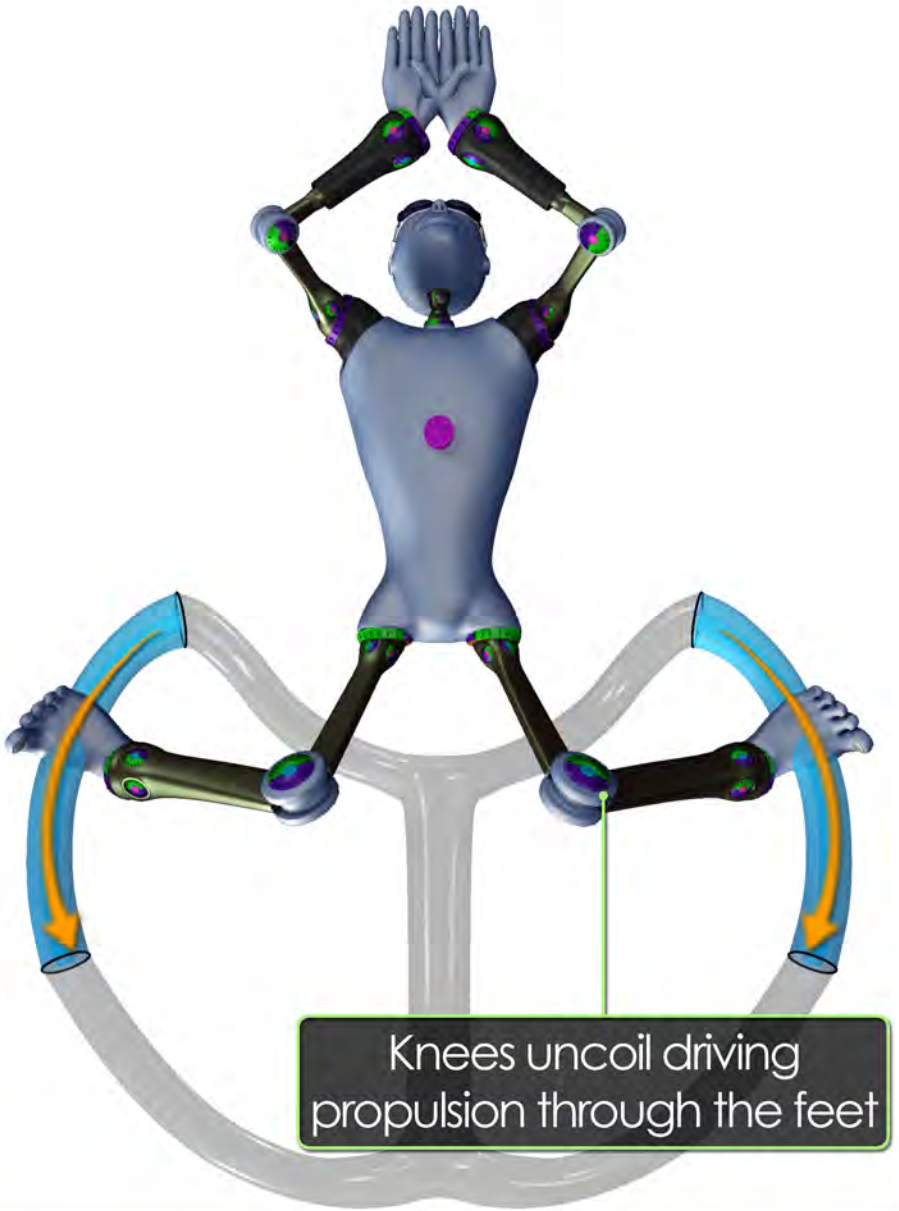
Dimension 3 - Force

200 Level - Knowledge Builder

L3 Press

Propulsion

The knees uncoil driving force through the feet and generating propulsion.



L4 Thrust

Propulsion

The legs scull inward at an accelerated rate providing propulsion.

Dimension 3 - Force

200 Level - Memory Builder

1 A1

Describe force as it relates to this control.

2 A2

Describe force as it relates to this control.

3 A3

Describe force as it relates to this control.

4 A4

Describe force as it relates to this control.

5 H1

Describe force as it relates to this control.

6 L2

Describe force as it relates to this control.

Dimension 3 - Force

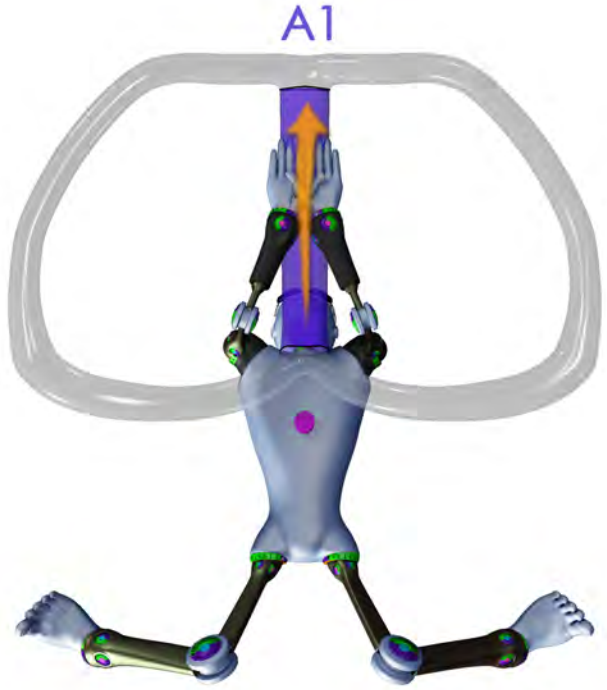
200 Level - Vision Builder

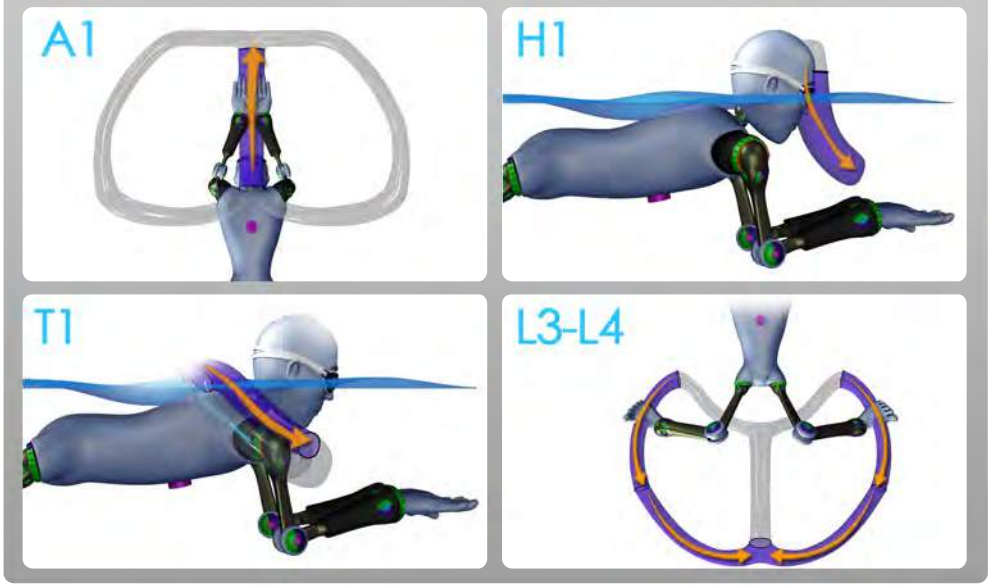
Draw out all of the phases, include Key and force lines and arrows for each control.

Dimension 4 - Timing

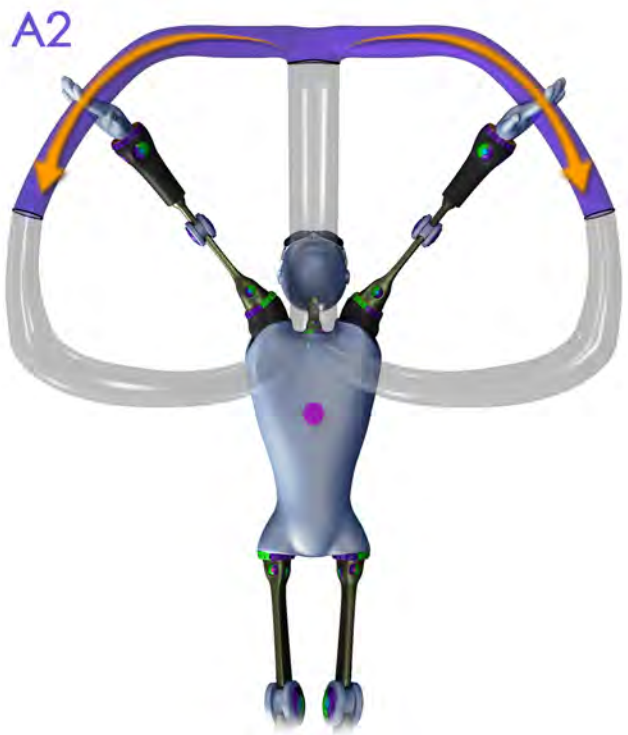
200 Level - Knowledge Builder

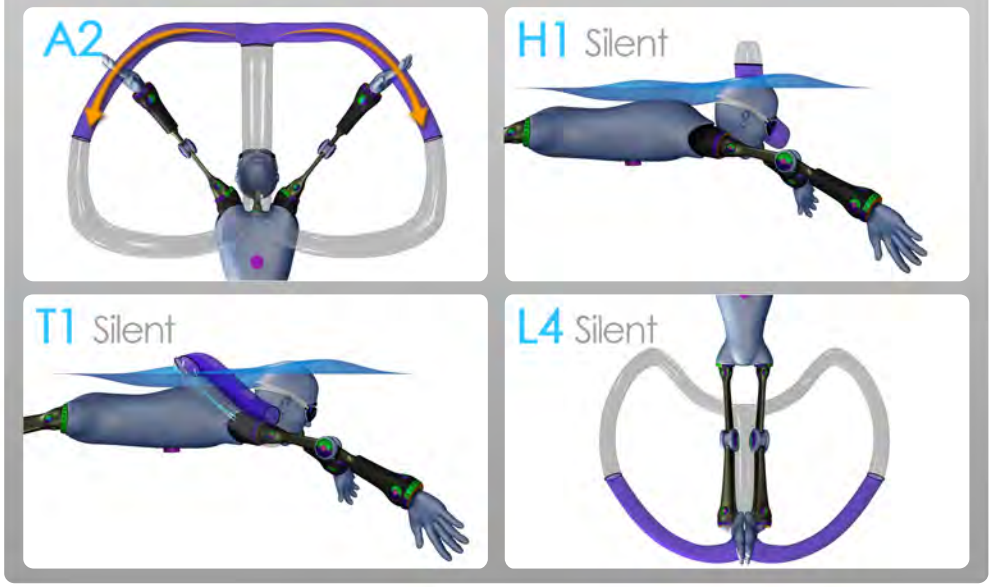
A1 Below Surface Recovery





A2 Gather

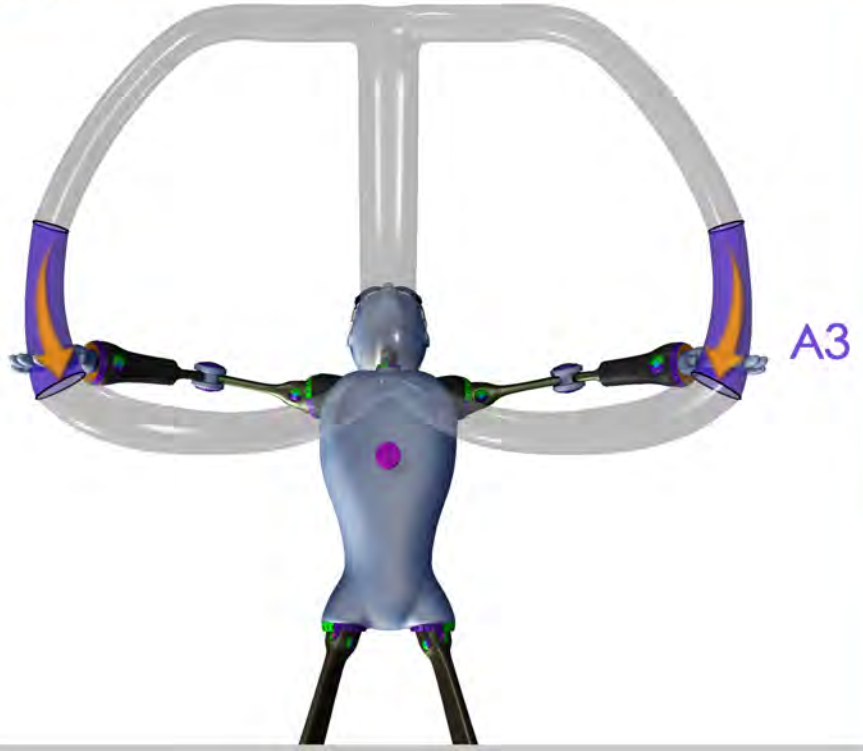


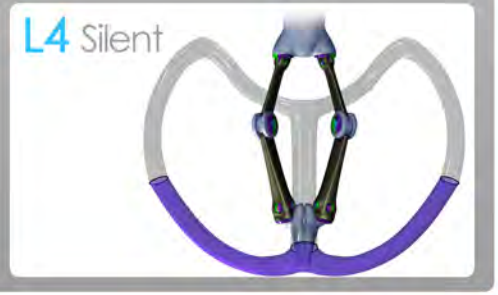


Dimension 4 - Timing

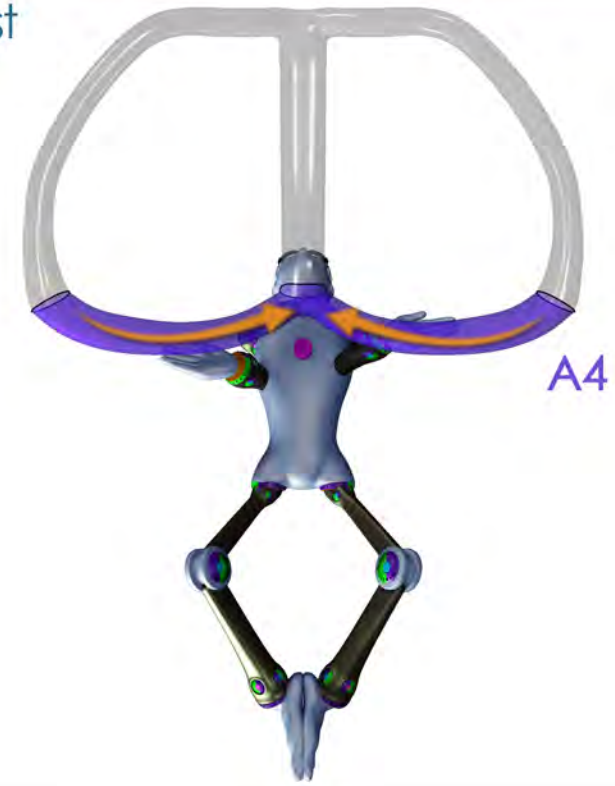
200 Level - Knowledge Builder

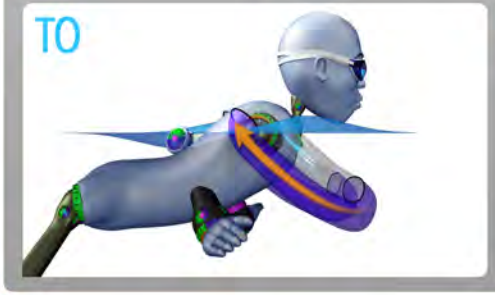
A3 Press





A4 Thrust

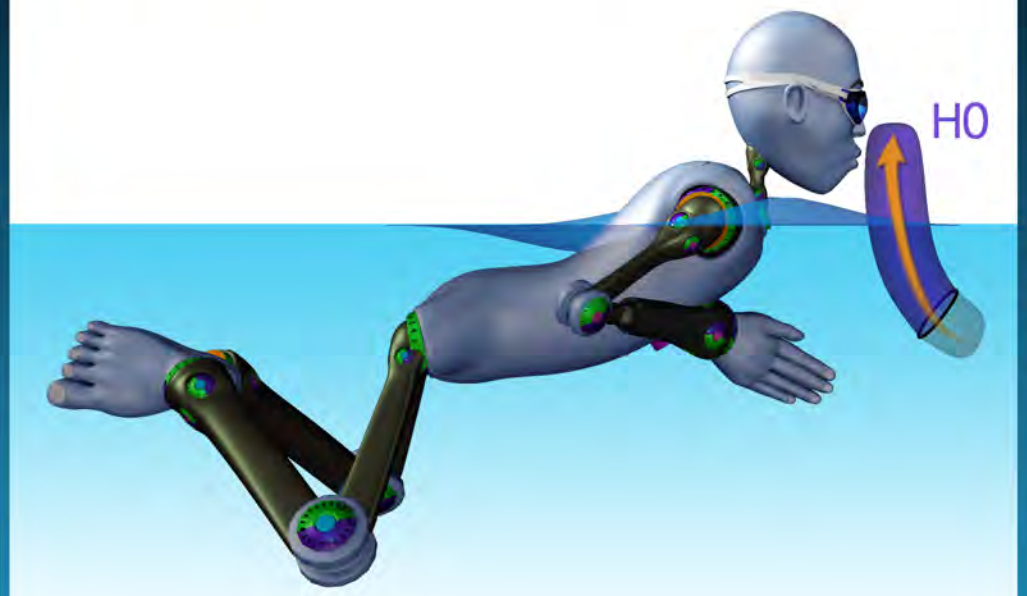


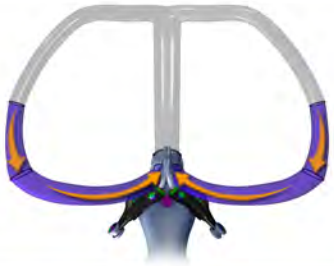


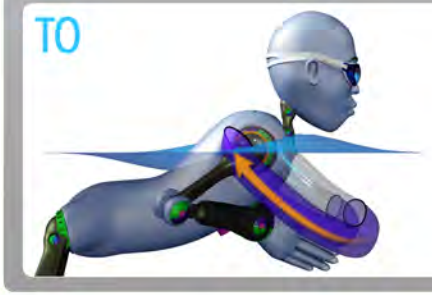
Dimension 4 - Timing

200 Level - Knowledge Builder

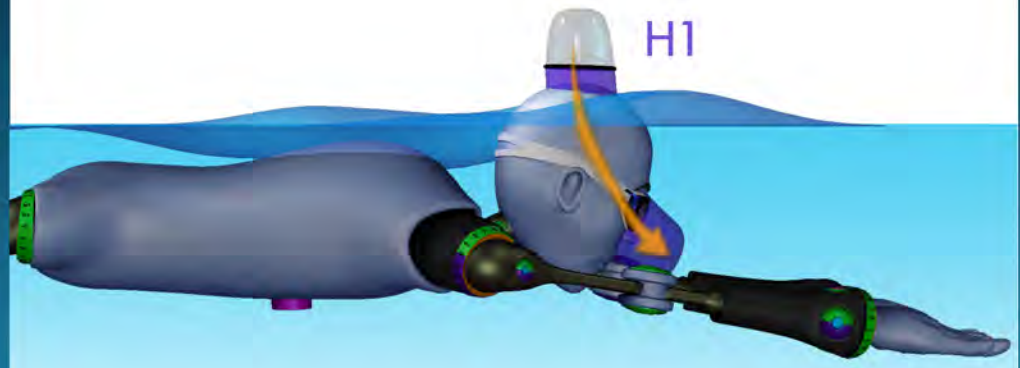
H0 Above Surface Recovery

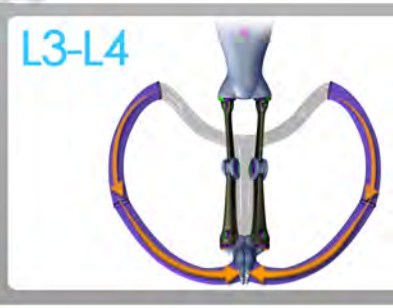






H1 Below Surface Recovery

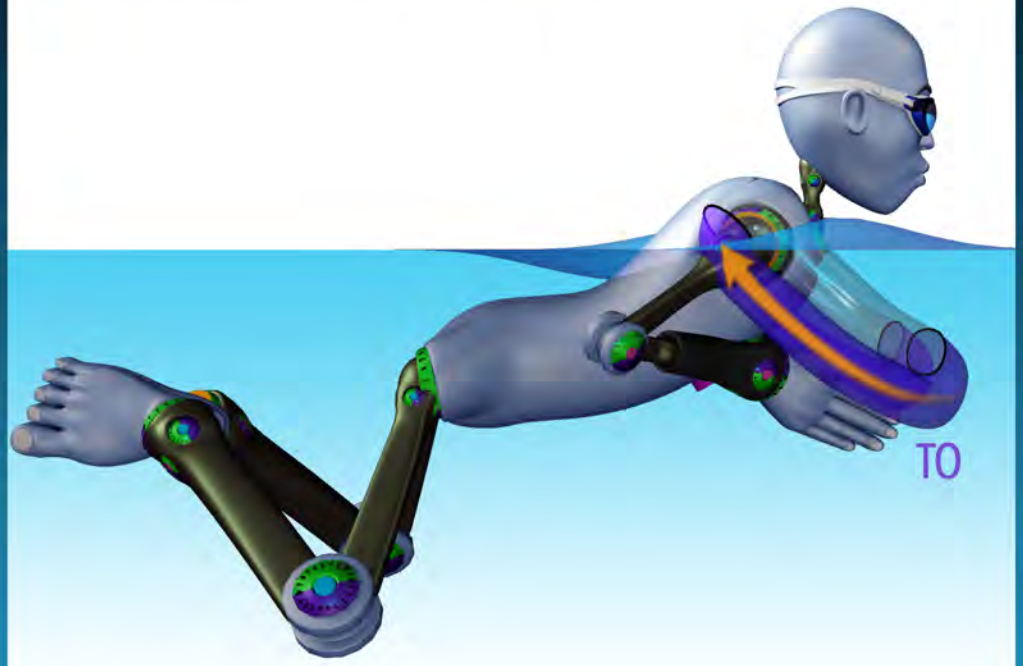


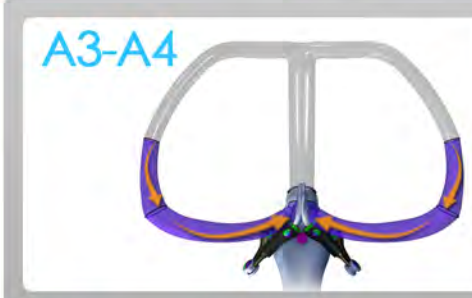


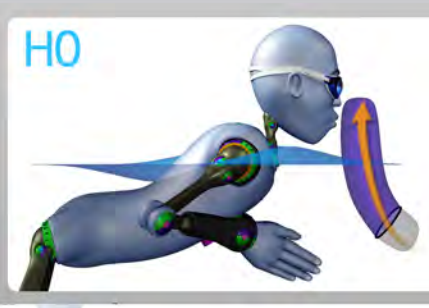
Dimension 4 - Timing

200 Level - Knowledge Builder

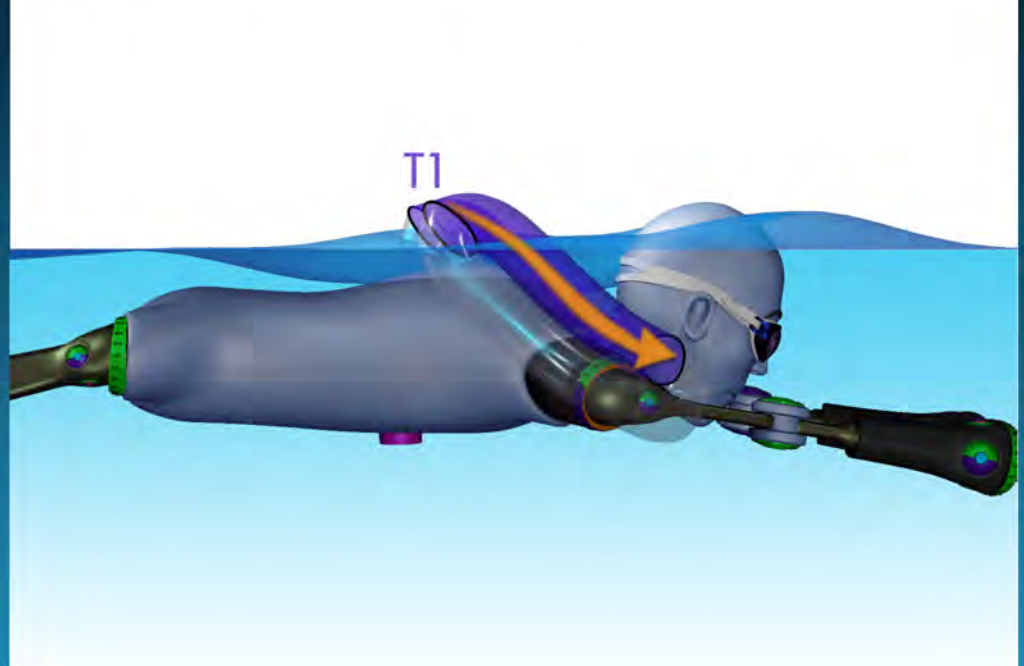
T0 Below Surface Recovery

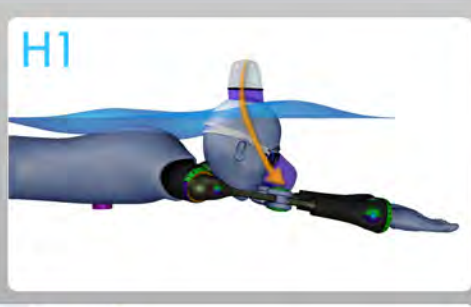






T1 Above Surface Recovery

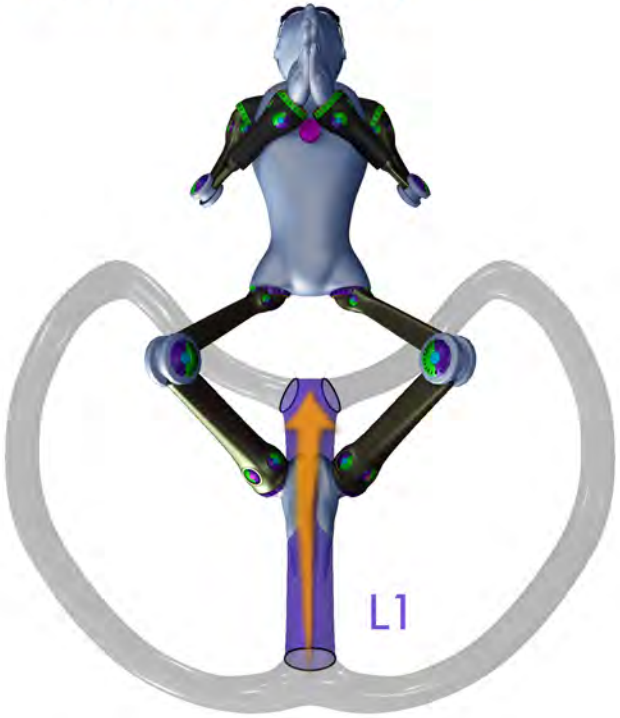


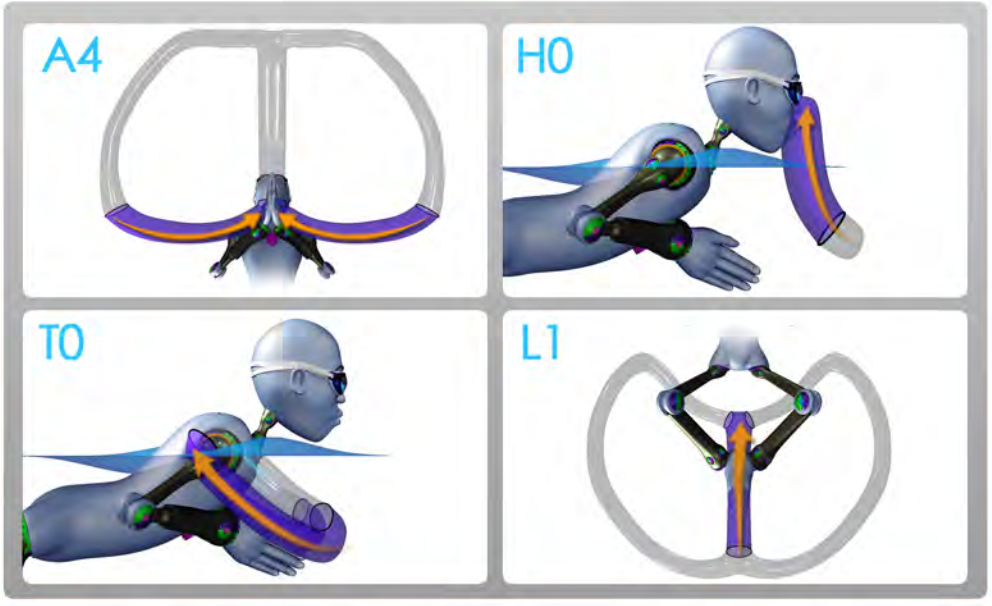


Dimension 4 - Timing

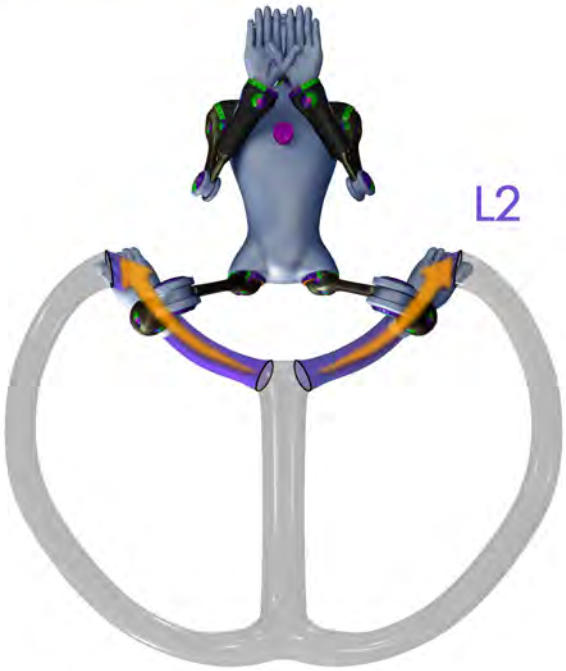
200 Level - Knowledge Builder

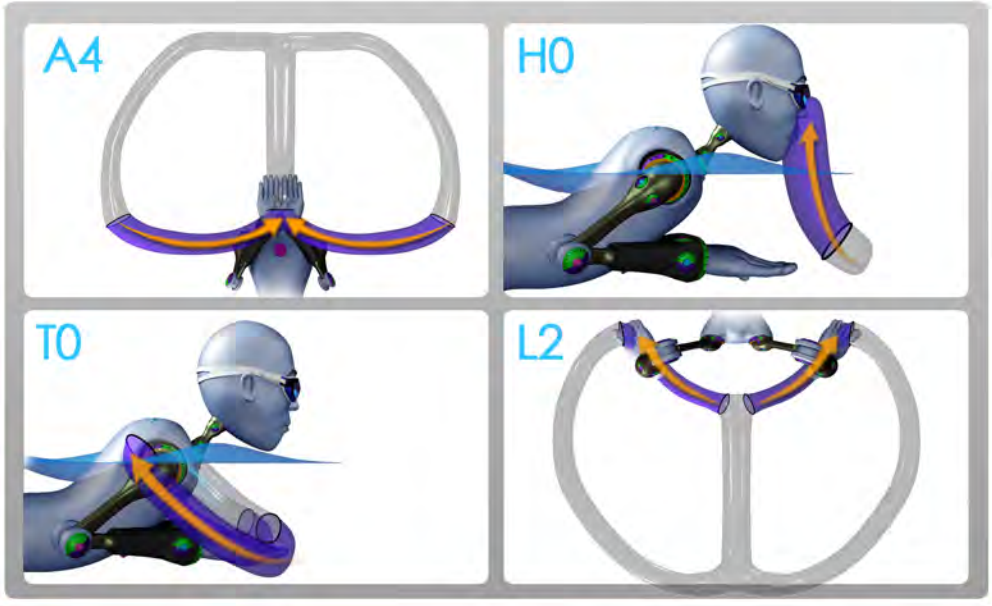
L1 Below Surface Recovery





L2 Below Surface Recovery

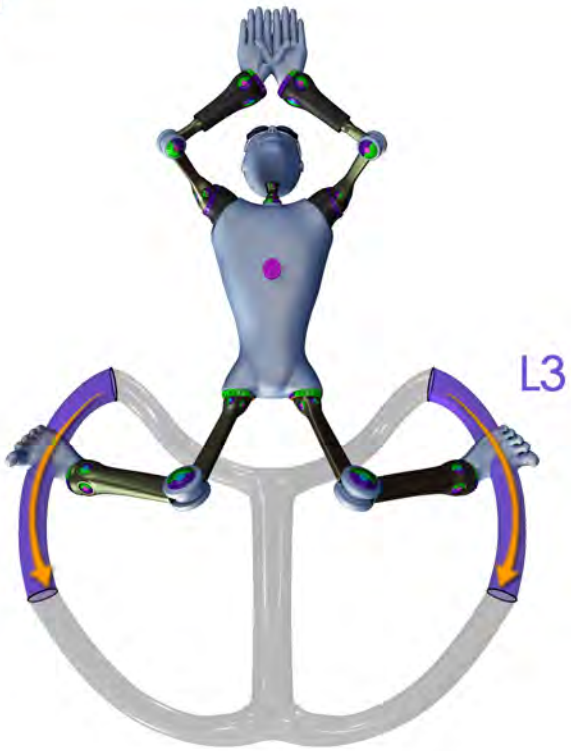


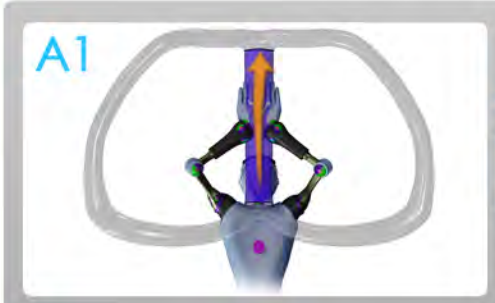


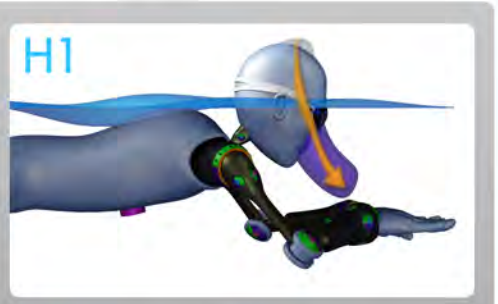
Dimension 4 - Timing

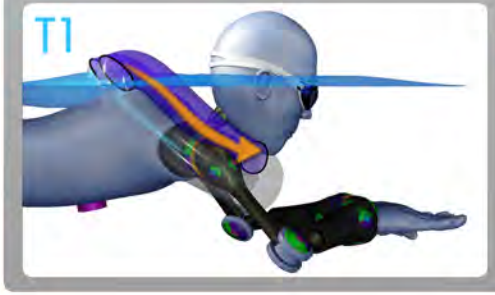
200 Level - Knowledge Builder

L3 Gather

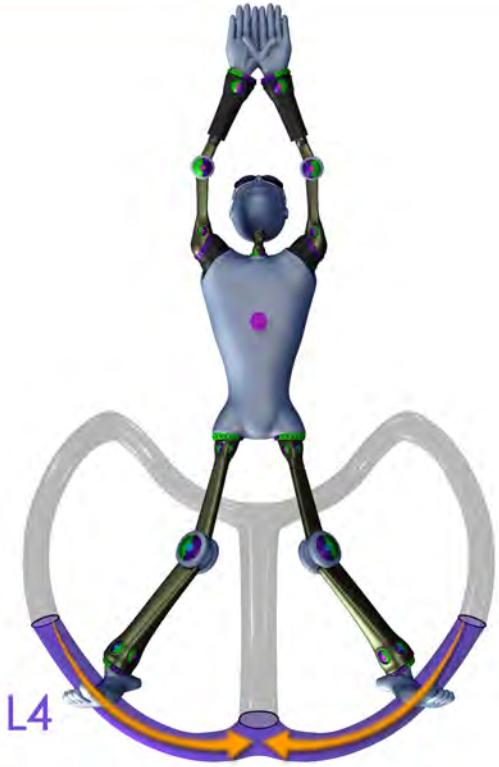


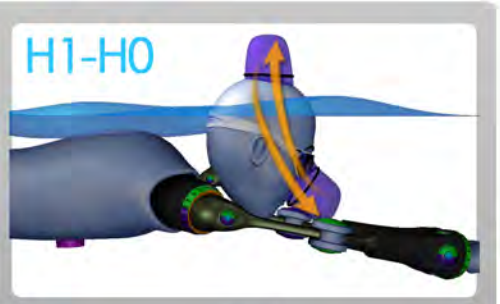


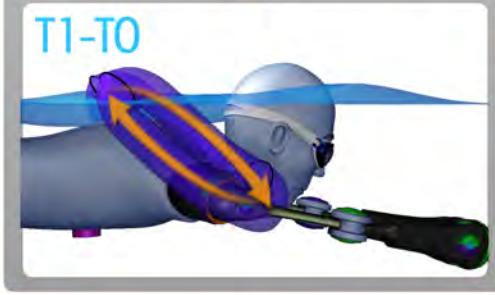


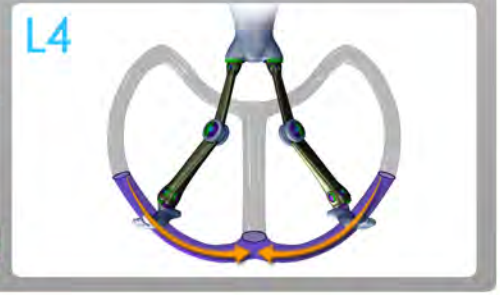


L4 Press









Dimension 4 - Timing

200 Level - Memory Builder

1 A1

Define the timing for this control.

Arm	Head
Torso	Legs

2 A2

Define the timing for this control.

Arm	Head
Torso	Legs

3 A3

Define the timing for this control.

Arm	Head
Torso	Legs

4 H0

Define the timing for this control.

Arm	Head
Torso	Legs

5 T0

Define the timing for this control.

Arm	Head
Torso	Legs

6 T1

Define the timing for this control.

Arm	Head
Torso	Legs

Dimension 4 - Timing

200 Level - Vision Builder

1 A1

Draw out the timing of A1 as it relates to the legs.

2 A4

Draw out the timing of A4 as it relates to the legs.

3 H0

Draw out the timing for H0 as it relates to the arms.

4 H1

Draw out the timing for H1 as it relates to the arms.

5 T0

Draw out the timing for T0 as it relates to the arms.

6 T1

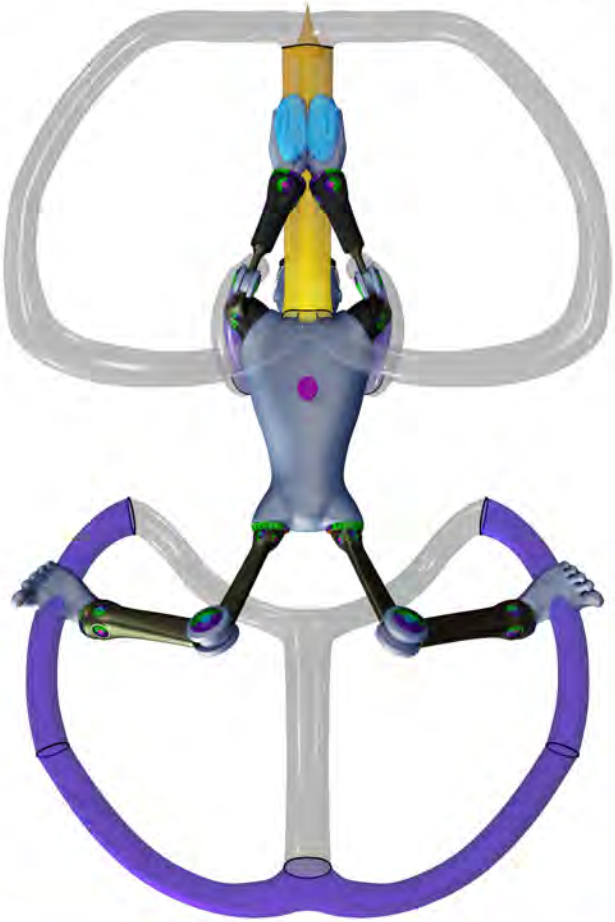
Draw out the timing for T1 as it relates to the arms.

Dimension 5 - Blend

200 Level - Knowledge Builder

A1 Below Surface Recovery

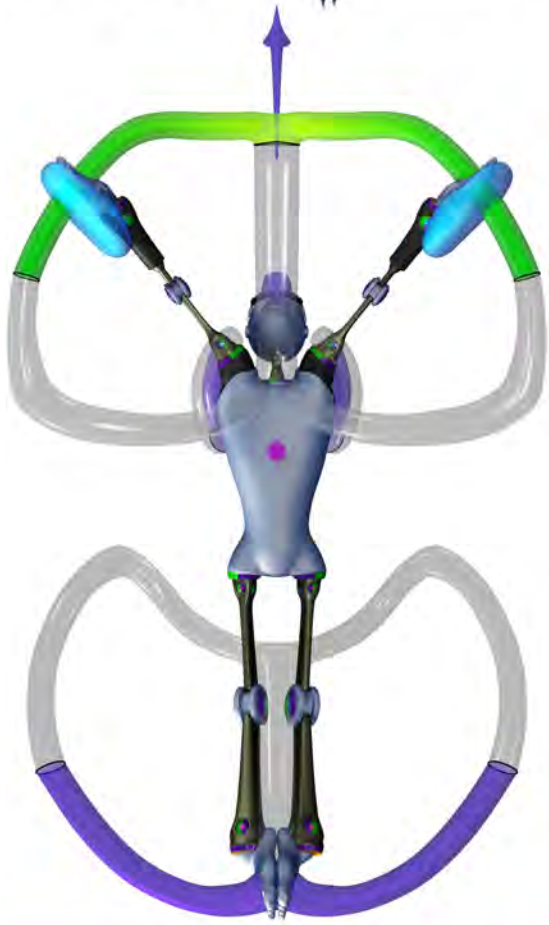
D1				Definitions		
Control #	1. Key	2. Name	3. Common Terminology	4. Visual	5. Verbal	6. Physical (In-Water)
1.	A1	Below Surface Recovery	Extension, Reach		< the hands are together below the xyphoid process > the arms are fully extended forward	2X



D2	D3	D4	Timing		
7. Hydro Dynamics	8. Force	9. A	10. H	11. T	12. L
The arm propellers extend forward and down together creating the pressure field.	The elbows uncoil causing the arms to generate momentum.	A1	H1	T1	L3 - L4

A2 Gather

D1				Definitions		
Control #	1. Key	2. Name	3. Common Terminology	4. Visual	5. Verbal	6. Physical (In-Water)
2.	A2	Gather	Beginning the Pull, Outward Scull, Catch, Outsweep		< the arms are fully extended forward > the hands are level with the top of the head	2X



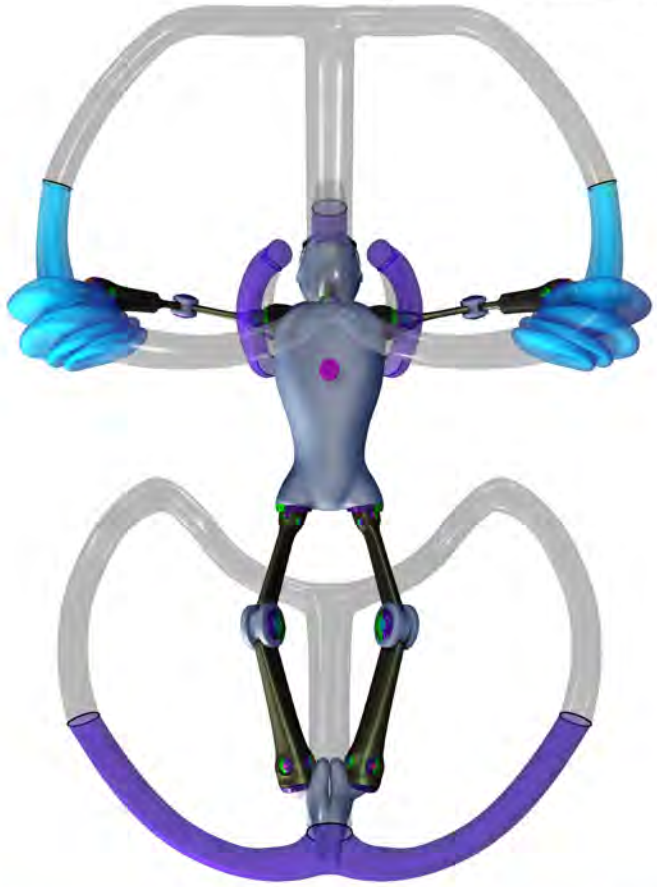
D2	D3	D4	Timing		
7. Hydro Dynamics	8. Force	9. A	10. H	11. T	12. L
The arm propellers are repositioned onto the front border of the pressure field.	The elbows coil slowly to prepare for A3. A small amount of propulsion is created during this process.	A2	H1 slnt	T1 slnt	L4 slnt

Dimension 5 - Blend

200 Level - Knowledge Builder

A3 Press

Control #	D1 Definitions 1. Key	2. Name	3. Common Terminology	4. Visual	5. Verbal	6. Physical (In-Water)
3.	A3	Press	Pulling Backward, Pull, Backsweep		< the hands are level with the top of the head > the hands are level with the xyphoid process and outside the width of the elbows	2X



D2 7. Hydro Dynamics	D3 8. Force	D4 Timing 9. A	10. H	11. T	12. L
The arm propellers are pulled backward, pressing on the pressure field, and causing a pressure field stacking effect.	The arm propellers are pressed backward at a moderate speed creating propulsion and setting up for A4.	A3	H0	T0	L4 slnt

A4 Thrust

Control #	D1 Definitions 1. Key	2. Name	3. Common Terminology	4. Visual	5. Verbal	6. Physical (In-Water)
4.	A4	Thrust	Inward Scull, Finish, Pull, Hands Together, Insweep		< the hands are level with the xyphoid process outside the width of the elbows > the hands are together below the xyphoid process	2X

D2 7. Hydro Dynamics	D3 8. Force	D4 Timing 9. A	10. H	11. T	12. L
The arm propellers push on the outside/ front border of the pressure field using a sculling motion.	The arms scull inward at an accelerated rate.	A4	H0	T0	L4 slnt, L1-L2

Dimension 5 - Blend

200 Level - Knowledge Builder

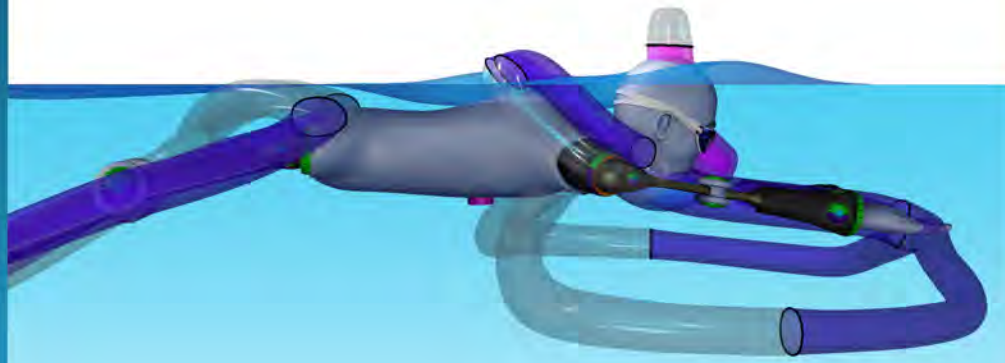
H0 Above Surface Recovery

Control #	D1 1. Key	2. Name	3. Common Terminology	Definitions 4. Visual	5. Verbal	6. Physical (In-Water)
5.	H0	Above Surface Recovery	Breathing, Lifting Head, Head Up		< the head is at its lowest point > the head is at its highest point	2T

D2 7. Hydro Dynamics	D3 8. Force	D4 Timing 9. A	10. H	11. T	12. L
The head lifts upward so the mouth is above the surface for inhalation.	As the head is lifted it accelerates to help drag the shoulders backward.	A3 - A4		T0	L4 slnt, L1 - L2

H1 Below Surface Recovery

Control #	D1 1. Key	2. Name	3. Common Terminology	Definitions 4. Visual	5. Verbal	6. Physical (In-Water)
6.	H1	Below Surface Recovery	Putting the Head Back Down		< the head is at its highest point > the head is at its lowest point	2T



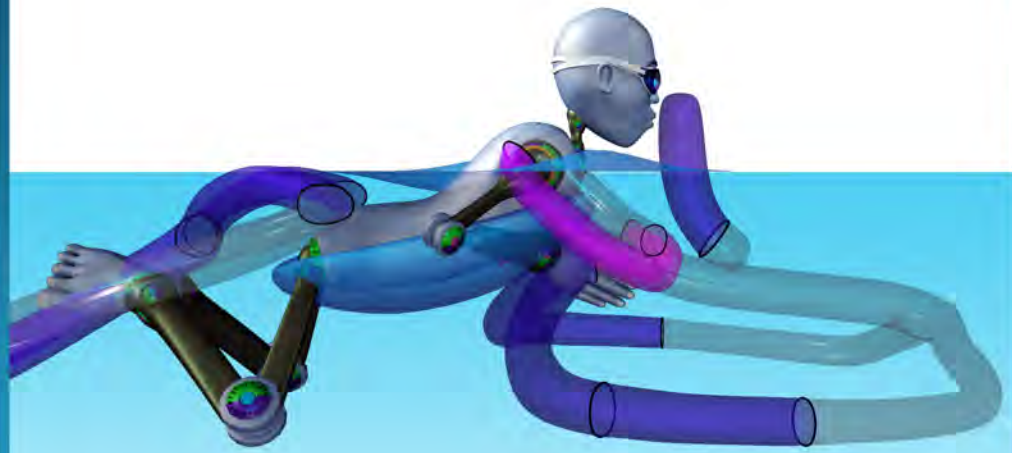
D2 7. Hydro Dynamics	D3 8. Force	D4 Timing 9. A	10. H	11. T	12. L
The head is extended forward and down into a streamline position to reduce drag.	The head accelerates as it thrusts forward dragging the torso forward and providing power.	A1 - A2		T1	L3 - L4

Dimension 5 - Blend

200 Level - Knowledge Builder

T0 Above Surface Recovery

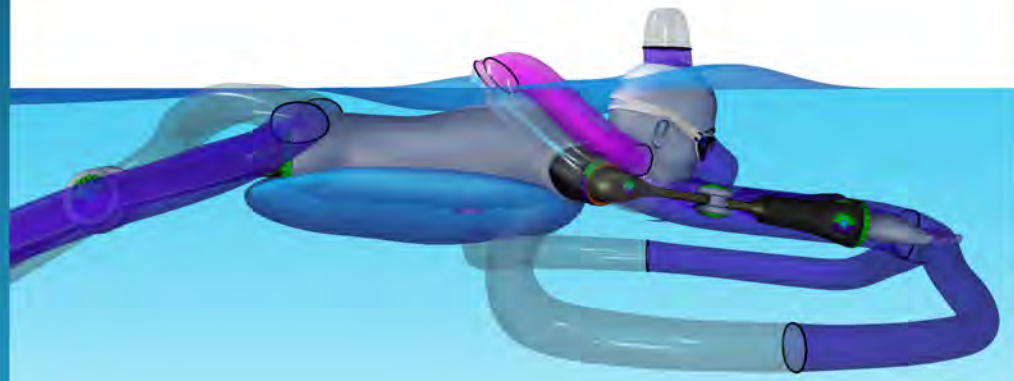
Control #	D1 1. Key	2. Name	3. Common Terminology	Definitions 4. Visual	5. Verbal	6. Physical (In-Water)
7.	T0	Above Surface Recovery	Lifting the Shoulders, Arching the Back		< the shoulders are at their lowest point > the shoulders are at their highest point	2T



D2 7. Hydro Dynamics	D3 8. Force	D4 Timing 9. A	10. H	11. T	12. L
The torso arches backward allowing the arm propellers to apply greater pressure on the front border of the pressure field.	The torso arches backward in an accelerated manner dragging the arms backward.	A3 - A4	H0		L4 slnt, L1 - L2

T1 Below Surface Recovery

Control #	D1 1. Key	2. Name	3. Common Terminology	Definitions 4. Visual	5. Verbal	6. Physical (In-Water)
8.	T1	Below Surface Recovery	Dropping the Shoulders, Shoulders Forward, Lunging Forward		< the shoulders are at their highest point > the shoulders are at their lowest point	2T



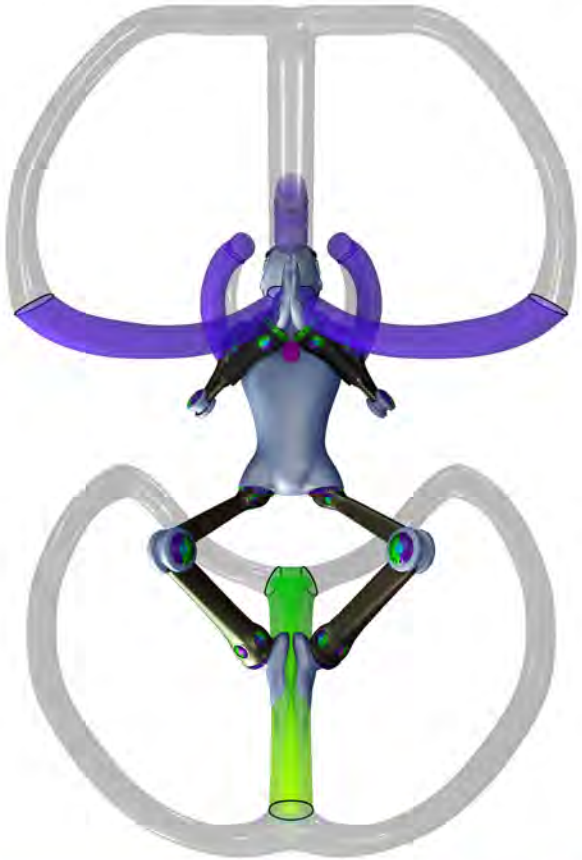
D2 7. Hydro Dynamics	D3 8. Force	D4 Timing 9. A	10. H	11. T	12. L
The shoulders are lowered to the bottom of the trough placing the body in a streamline position to reduce drag. In this position the shoulders enable the arm paddles to reach further forward to create a larger pressure field.	The shoulders accelerate as they thrust forward driving the arms forward.	A1 - A2	H1		L3 - L4

Dimension 5 - Blend

200 Level - Knowledge Builder

L1 Below Surface Recovery

D1				Definitions		
Control #	1. Key	2. Name	3. Common Terminology	4. Visual	5. Verbal	6. Physical (In-Water)
9.	L1	Below Surface Recovery	In-Front, Up, Bending the Knees, Bringing the Feet Up, Drawing the Feet In		< the legs are fully extended backward and the feet are together > the knees have reached their greatest bend and the feet are close to the butt	2X



D2	D3	D4	Timing		
7. Hydro Dynamics	8. Force	9. A	10. H	11. T	12. L
The leg propellers are drawn forward through the tunnel of water to recover the legs for the kick.	The legs are drawn forward toward the butt as the knees coil to set up for L2 and L3.	A4	H0	T0	L1

L2 Gather

D1				Definitions		
Control #	1. Key	2. Name	3. Common Terminology	4. Visual	5. Verbal	6. Physical (In-Water)
10.	L2	Gather	Out-Front, Out, Turning Feet Out		< the knees have reached their greatest bend and the feet are close to the butt > the knees have rotated inward and the feet are outside the width of the hips and knees	2X

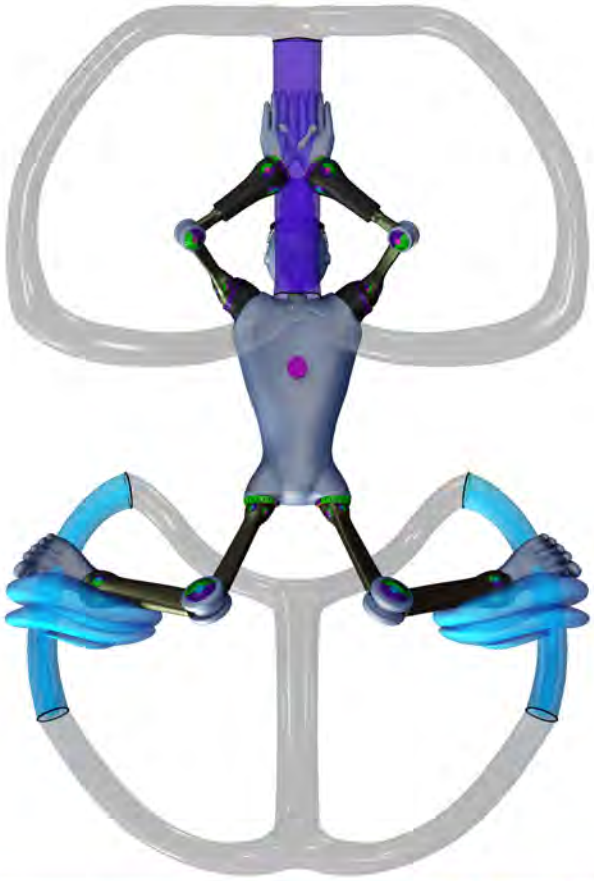
D2	D3	D4	Timing		
7. Hydro Dynamics	8. Force	9. A	10. H	11. T	12. L
The knees rotate inward as the feet turn outward to position the leg propellers on the front border of the pressure field.	The knees rotate inward as the feet turn outward to position the legs for L3.	A4	H0	T0	L2

Dimension 5 - Blend

200 Level - Knowledge Builder

L3 Press

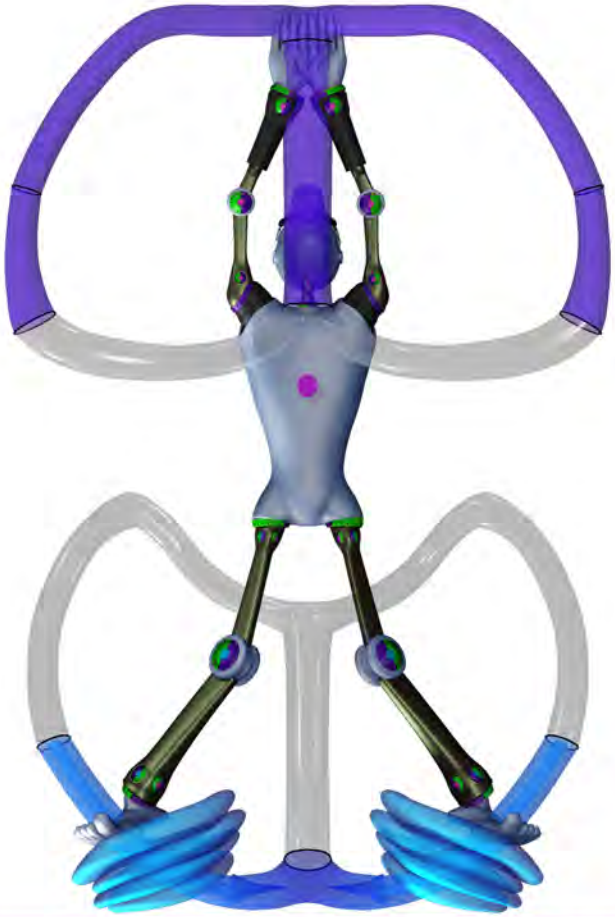
Control #	1. Key	2. Name	3. Common Terminology	4. Visual	5. Verbal	6. Physical (In-Water)
11.	L3	Press	Out-Back, Back, Kicking Back, Backsweep, Extending Back		< the legs begin to press backward > the feet reach their furthest point back and outward	2X



D2 7. Hydro Dynamics	D3 8. Force	D4 9. A	Timing 10. H	11. T	12. L
The leg propellers push on the front border of the pressure field causing a pressure field stacking effect.	The knees uncoil driving force through the feet and generating propulsion.	A1	H1	T1	L3

L4 Thrust

Control #	1. Key	2. Name	3. Common Terminology	4. Visual	5. Verbal	6. Physical (In-Water)
12.	L4	Thrust	In-Back, In, Finish, Legs Together, Feet Together		< the feet are at their furthest point backward and out > the feet are together	2X



D2 7. Hydro Dynamics	D3 8. Force	D4 9. A	Timing 10. H	11. T	12. L
The leg propellers scull inward driving off the pressure field.	The legs scull inward at an accelerated rate providing propulsion.	A1 - A3	H1 - H0	T1 - T0	L4

Dimension 5 - Blend

200 Level - Memory Builder

1 A1
Describe the aspects of force and hydro dynamics as they relate to this control.

2 A2
Describe the concerns related to too much hand speed in this control.

3 A3
Describe the concern of maintaining only a primary pressure field in this control.

4 A4
Contrast the differences related to PSD (Slippers, Drifters, Push the Object, and Push Off the Object) as force and hydro dynamics are integrated into this control.

5 H1
Define the primary hydro dynamic object interacting with the face and the force related considerations in this control.

6 T0
Describe how this control ultimately drives the swimmer down the pool.

Dimension 5 - Blend

200 Level - Vision Builder

Draw out a well performed A1 (primary arm) to A3/4 (opposing arm) relationship integrating hydro dynamics, force and timing into your picture.

About Us

Fluid Mechanics Inc.

Fluid Mechanics is an athletic consulting company that takes a unique visual approach to help swimmers develop, achieve and exceed their goals. The founder, John Waldman, a former world-ranked swimmer is a renowned leader in competitive swimming instruction. Having been mentored by the legendary Dr. James Counsilman, one of the most distinguished coaches in the world, Waldman has the tools and the knowledge to unlock the full potential of any swimmer. Since 1987, Fluid Mechanics has built a network of highly trained experts dedicated to empowering swimmers to go beyond their limits. Swimmers have the opportunity to learn directly from these world-class consultants through personalized clinics, workshops, and specialized camps.

Helping Thousands of Swimmers Achieve Their Goals

- More than 6,500 Fluid Mechanics swimmers have since competed in Junior Olympics, Zone and Sectional Championships
- Over 2,400 Fluid Mechanics swimmers have gone on to compete in YMCA Nationals, Junior and Senior Nationals, NCAA Championships, and Olympic Trials Fluid Mechanics collegiate athletes compete for nearly every major university: Harvard, Yale, Stanford, Princeton, Cal-Berkley, Indiana, Texas, Auburn and more
- Fluid Mechanics swimmers have been in every major international competition including World Championships, World Games, and the Olympics

Our Personalized Training System

Our visual system for learning, called FM Vision***Works***™, is the world's first program to use life-like avatars to teach the science of swimming. This ground-breaking training system utilizes the latest theories in sports psychology, exercise physiology, and biomechanics. With FM Vision***Works***™ avatars, swimmers internalize advanced athletic concepts at-a-glance. Simply put, swimmers just see it, then do it.

Making Swimmers Dreams Come Alive

How do we do it? We start by interacting directly with swimmers and their parents to understand their goals and aspirations. Then our experts use the FM Vision*Works*™ system to expand the swimmers' capabilities and transform them into high performance athletes. Throughout the process, our experts leverage the FM Vision*Works*™ training system to quickly teach complex swim concepts, giving each swimmer the confidence and skills they need to make their dreams come alive.

The "Father of Competitive Swimming"
Dr. James E. Counsilman, Ph. D.
Professor & Swimming Coach
Emeritus Indiana University
Author of "The Science of Swimming"

"The approach of Fluid Mechanics, Inc. to the motivation and education of young athletes is unique. It is a reflection of the intensity and commitment to excellence of its creator."
- Doc Counsilman

About the Founder

John B. Waldman

Waldman held the USMS Breaststroke World Record for over 10 years and was ranked 11th in the world by the American Swim Coaches Association in 1982. He is the creator of the FM Vision***Works***™ training system.

- US Master's World Record Holder
- Five Time US Master's American Record Holder
- Eight Time Senior National Finalist
- World Ranked Swimmer
- Canadian Cup Champion
- USS All-American
- Seven Time Big Ten Champion
- Eastern Collegiate Champion
- Captain Indiana University Swim Team
- Captain Hebron Academy Swim Team
- New England Prep School Champion
- New England YMCA Champion
- Prep School All-American
- Maine State YMCA Champion
- Maine Swimming Hall of Fame Inductee
- Author of "The Swimming Machine" educational series

Fluid Mechanics, Inc.