# Water Competence:
## A Brief History of Water Competence and Some Developmental Implications

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Do you have

***the ability to swim?***

Tell a person seated near you how you *know* you can swim....

# Now consider whether….

You would have the *ability to swim* in the surf like in this photo

# Why did your answer change?

I would argue that "*swimming ability*" is a *misnomer* since an "*ability*" is a relatively stable trait that you have inherited and doesn't change over time.

You *learned* to swim with practice; you didn't just know how to do it.

I also would suggest that despite knowing you can swim, you realize that you cannot swim *everywhere* (such as in this room without water!) nor should you swim at *certain times or places* (e.g., not in heavy surf or during a storm!)

# Why Is This Distinction Important?!

**Swimming** is NOT something each of us actually "*possesses*" at all times like our eye color, our height, or our skin color.

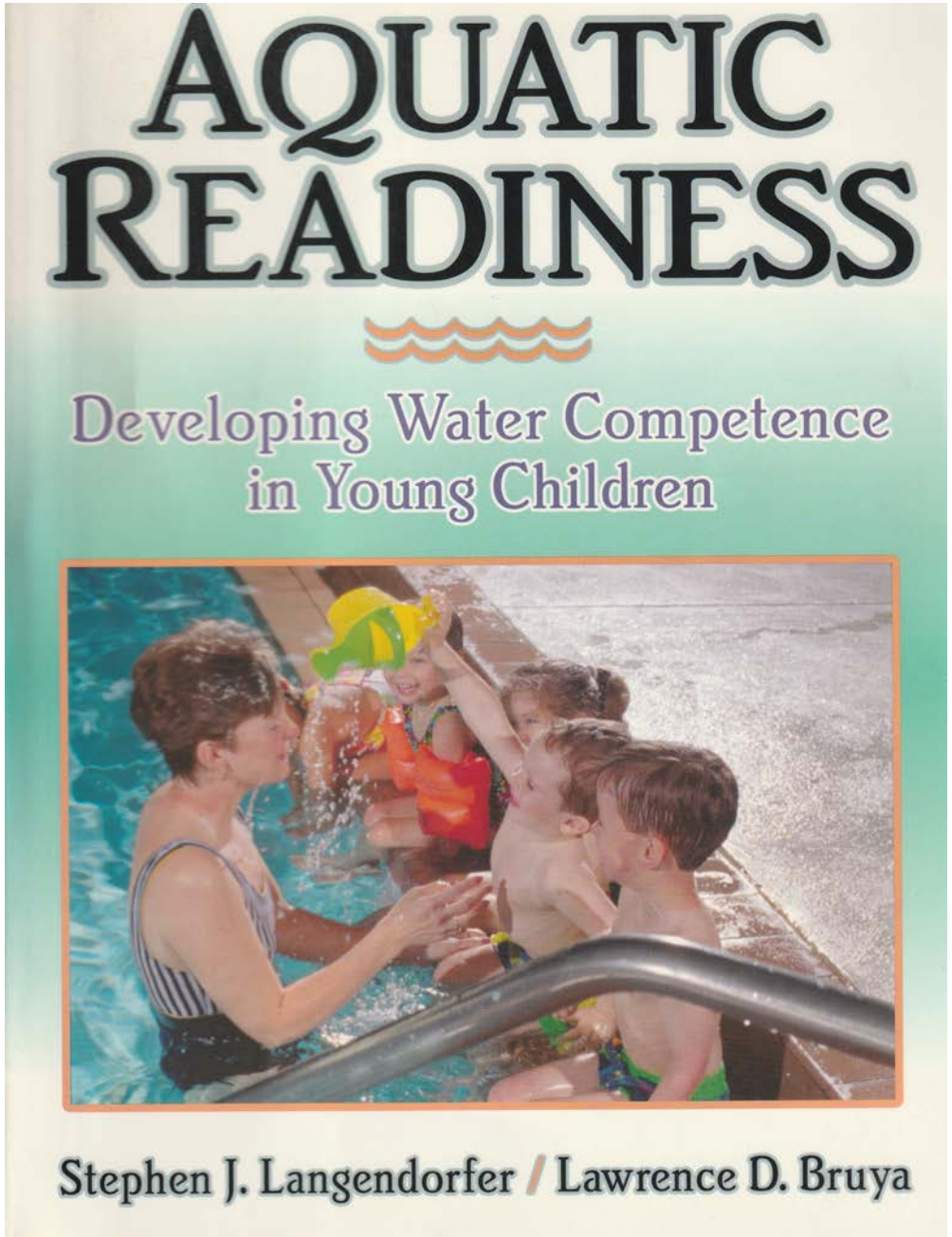
Instead, persons have a certain degree of *competence* (i.e., *water competence*) that allows us to swim.

***Water competence*** is a ***relative*** concept –

- *relative* to *each person* (*at each point in time*),
- *relative* to the *task goals and demands*,
- *relative* to *specific aquatic environments*.

# Where Did Water Competence Come From?

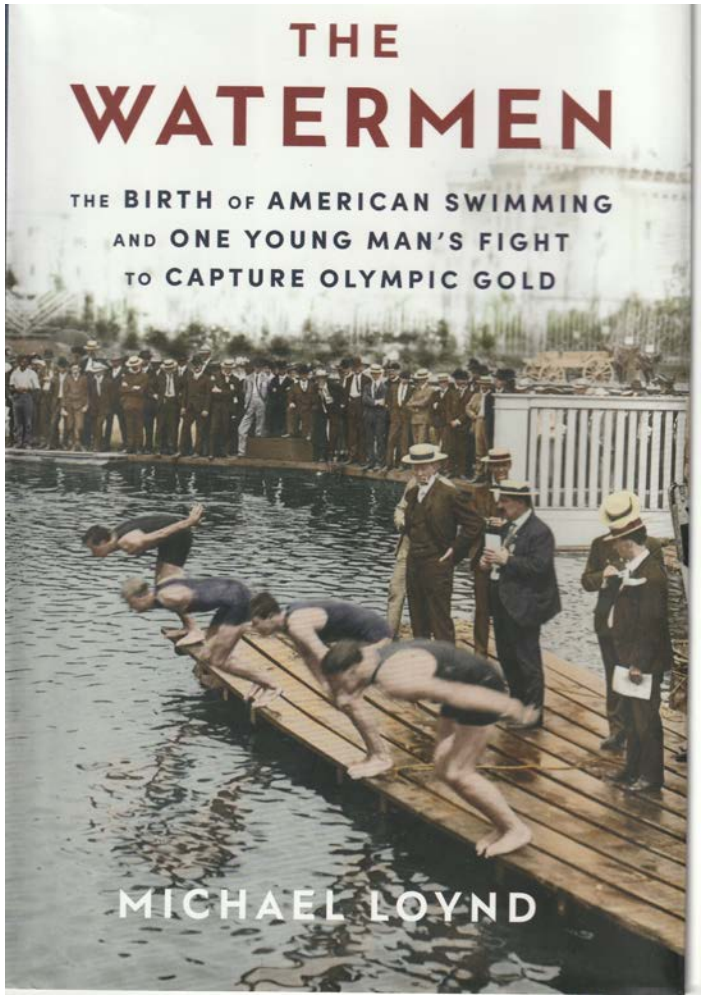
- ***Water competence*** was first proposed as a term by Langendorfer & Bruya (1995) in our text, *Aquatic Readiness*, as a gender inclusive term to replace an old British term, "***watermanship***."



# From Boating “Watermanship” to….

- Throughout the 19th Century, Britain was a dominant naval power that supported the British Empire around the world.
- “*Watermen*” originally was a name given to British seamen and boatmen who were skilled in operating a variety of kinds of small craft. They helped load and unload ships of the line in all British ports and on the Thames. Their skillfulness with various boats earned the title, “*watermanship*.”

# … the Emergence of Swimming “Watermen”

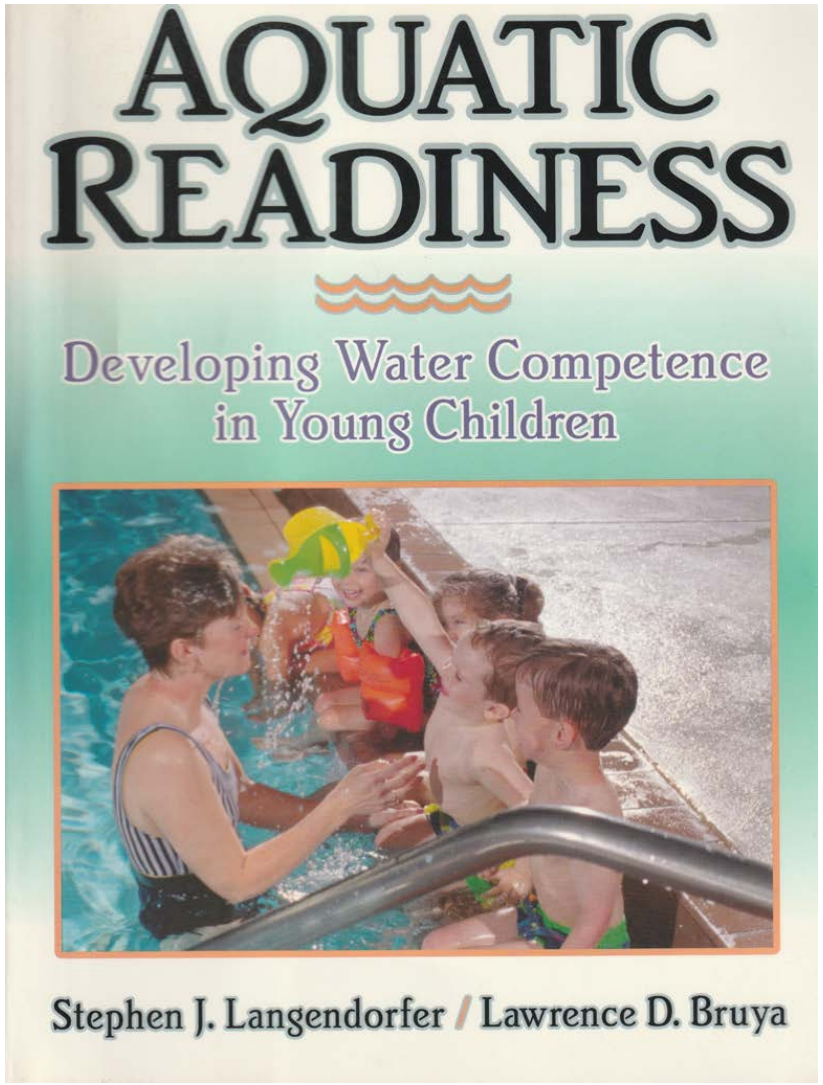



- In the latter part of the 19th Century and early 20th Century, competitive swimming emerged as an entity.
- Initially, British swimmers were known as the best and fastest swimmers using both sidestroke and the new-fangled trudgeon.
- Gradually, *watermen* from other countries including the U.S. gained skill and equality in this fledgling sport.

# Watermanship in Drowning Prevention

- American Wilbert E. Longfellow, a strong swimmer and swimming advocate, became concerned about the drowning toll plaguing the U.S. in early 1900s.
- He initially worked with the **Volunteer Life Saving Corps** in New York City. In 1914 he worked with the American Red Cross to found the **Red Cross Life Saving Corps** and eventually other water safety and learn to swim programs.
- He used "*watermanship*" to describe those persons skilled in a wide array of aquatic domains such as swimming, lifesaving, & boating.

# ….to Water Competence




- Originally, Langendorfer & Bruya proposed to use *water competence* as a gender-neutral synonym for *watermanship*.
- By using the *aquatic readiness* process, we proposed that more individuals could achieve a degree of success in many areas of aquatics.
- *Water competence* became popularized by Stallman, Moran, and others as a *concept* to improve efforts at *drowning prevention.*

# "*Competence*" Defined (in American English)

n. capacity equal to recruitment; property or means of subsistence sufficient to furnish the necessaries and conveniences of life, without superfluity

This implies "competence" is a *minimum* capacity

# Water Competence Definitions

## Moran (2013)

"the sum of all personal aquatic movements that help prevent drowning as well as the associated water safety knowledge, attitudes, and behaviors that facilitate safety in, on, and around water."

## American Red Cross (2015)

"proficiency in skills [including]…..

- *entry with total submersion,*
- *recovery to the surface …for at least one minute using floating or treading,*
- *change in body orientation allowing repositioning, turning at least 180°, and facing toward an exit direction,*
- *propulsion …and moving on front and/or on back … for at least 25m, [and]*
- *exit from the water…*

# American Red Cross Water Competence

## According to the Red Cross Scientific Advisory Aquatic Sub-Council:

"…water competency must include proficiency in skills that include the following conceptual water safety categories:

- *entry with total submersion,*
- *recovery to the surface, remain there for at least one minute using floating or treading,*
- *change in body orientation allowing repositioning, turning at least 180°, and facing toward an exit direction,*
- *propulsion including leveling off and moving on front and/or on back position for at least 25m, [and]*
- *exit from the water*.

Further, we propose that water competency is influenced by conditions of the aquatic environment (e.g., water temperature, clarity, wave and current action, depth, distance) into which the person may be introduced…. It also is influenced by specific task demands such as what clothing and other equipment an individual may be wearing or using…" [Quan *et al*, 2015, pp. 8-9]

# Water Competence and Drowning Prevention

- **Stallman *et al*. (2017)** proposed a more extensive set of water competencies that explicitly identified; not just ***psychomotor tasks*, but also *knowledge* and *attitudes/values*.**

| WATER COMPETENCIES | | | |
|---|---|---|---|
| 1 | **Safe entry**<br>a) Entry into water<br>b) Surface and level off | 9 | **Clothed water competencies** |
| 2 | **Breath control**<br>Integrated and effective breathing | 0 | **Open water competencies** |
| 3 | **Stationary surface competencies**<br>a) Float front and back<br>b) Tread water | 1 | **Knowledge of local hazards** |
| 4 | **Water orientation competencies**<br>a) Roll from front to back, back to front<br>b) Turn, L & R, on Front & Back | 12 | **Coping with risk**<br>a) Recognize and avoid risk<br>b) Judgment of risk and action |
| 5 | **Swimming competencies**<br>a) Swim on the front<br>b) Swim on the back | 13 | **Assess personal competency** |
| 6 | **Underwater competencies**<br>a) Surface dive<br>b) Swim underwater | 14 | **Recognize/assist a drowning person** |
| 7 | **Safe exit** | 15 | **Water Safety Attitudes & values** |
| 8 | **Use of personal flotation devices (PFDs)** | | |

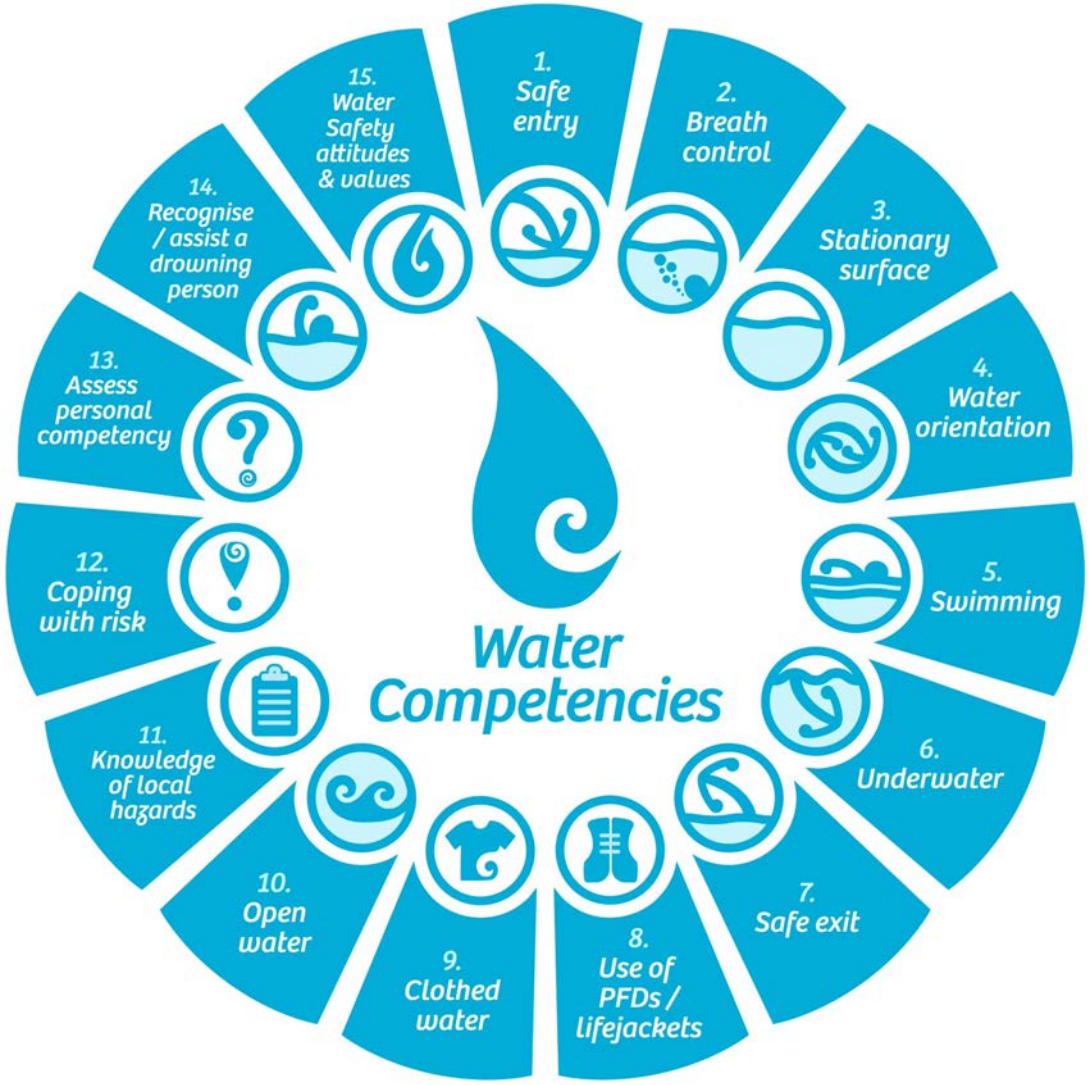
# Proposed Water Competence Taxonomy

Competencies 1-10 = psychomotor tasks (*water skills*)

Competencies 11-13 = knowledge (water smarts)

Competency 14-15 = affective value/ judgment (rescuing others)

# Drowning Prevention Auckland Model




https://www.dpanz.org.nz/research/water-competencies/

# Stationary Surface Competencies

**Rationale:**

“Human flotation is dependent on the relationship between the body’s mass and volume, i.e. density. For many, positive buoyancy can be maintained by inflating dormant alveoli space and increasing respiration rate via breath control.

“Treading water is usually used when wishing to remain stationary with the head above the surface. It is one of the most versatile and essential of water competencies.”

**Research Evidence Examples**

Junge, M., Blixt, T., & Stallman, R. (2010). The construct validity of a traditional 25m test of swimming competence. In P-L. Kjendlie, R. Stallman, and J. Cabri, (Eds.), BMS XI

Moran, K., et al., (2012). Can you swim? Real and perceived water competency among young adults. *IJARE*, *6*(2), 122-135.

# Use of Personal Flotation Devices (PFDs)

**Rationale**

*"In spite of the logic of personal flotation devices (PFDs)/lifejacket use as protective, only in recent years has evidence appeared which directly links it with reduction in drowning incidence (US Coast Guard, 2003)."*

*"All water competencies should be practiced with a PFD although only modest levels can be achieved for surface diving and swimming under water."*

**Research Evidence Examples**

Cumming, P., Mueller, B.A., & Quan, L. (2011). Association between wearing a personal flotation device and death by drowning among recreational boaters: A matched cohort analysis of United States Coast Guard data. *Injury Prevention.*

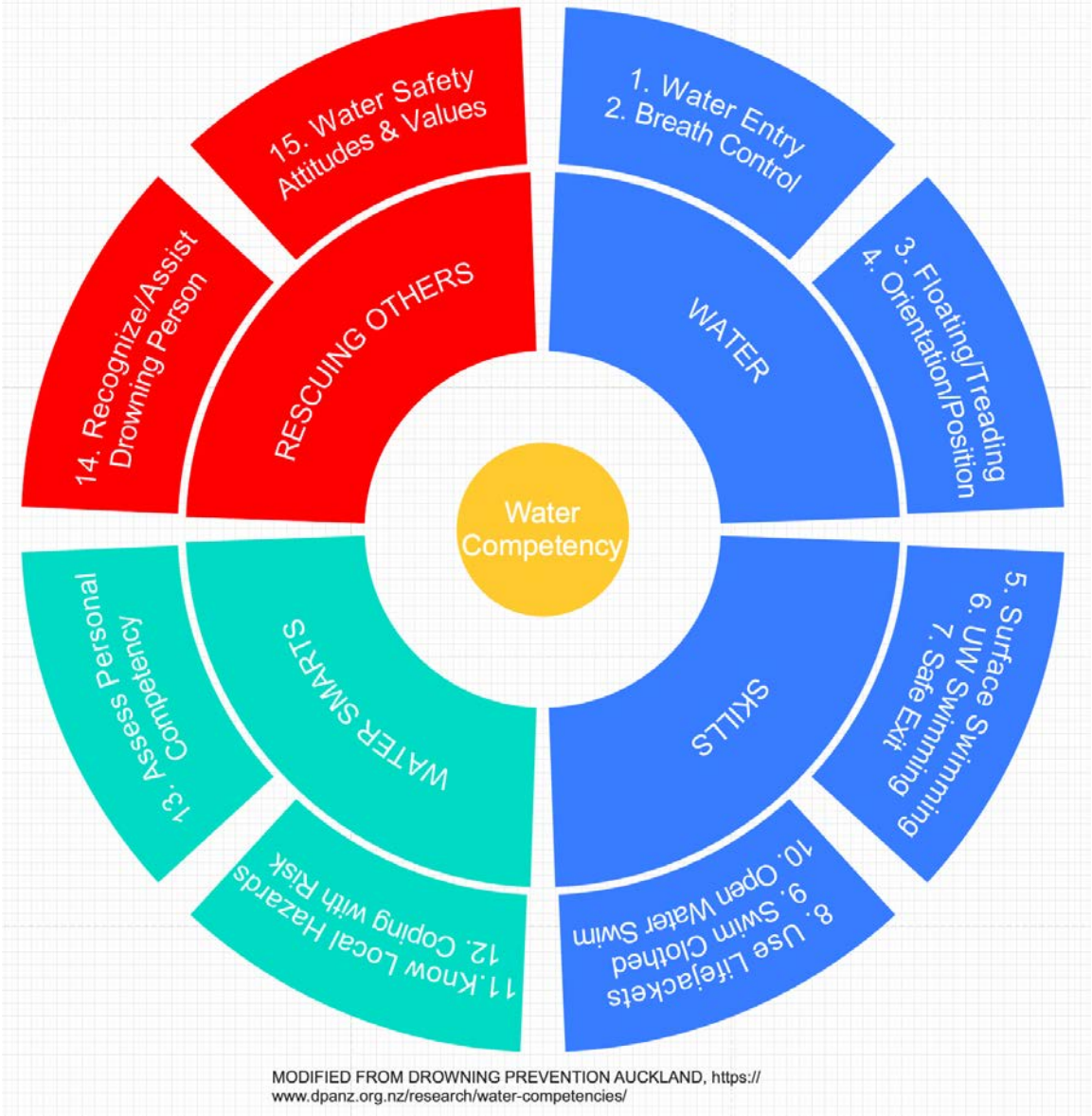
Moran, K. (2011a). Rock-based fisher safety promotion: Five years on. *IJARE*, *5*(2), 164-173

# Water Safety USA WC Variation

**Water Safety USA** used the Stallman et al. (2017) paper and grouped the competencies into three larger groups: ***water smarts*** (knowledges); ***water skills*** (aquatic activities), and ***rescuing others*** (including recognizing drowning, rescue, and CPR).

Just this week, the American Red Cross has created a model combining the 15 Stallman et al. water competencies with the three Water Safety USA groupings of water competencies.

# American Red Cross Model (*in prep*)



# Other Water Competency Synonyms

- A number of other persons have suggested terms that are synonymous with water competence:
  - **Aquatic Competence**
  - **Aquatic Literacy**
  - **Aquaticity**
- I suggest we accept all these terms to equal roughly the same concept.

# Water Competence: A Dynamic Definition

"The degree to which a person's aquatic behaviors, knowledge, and attitudes **meet** (*or exceed*) task demands and aquatic environmental conditions *moment-to-moment*, *over time*, and for a *wide variety of aquatic situations*."

Langendorfer, 2018

# Developmental Perspective

The ***dynamic developmental water competence perspective*** takes a very different approach from the traditional approach to understand how swimming behaviors change and why:

- No swimming behaviors are considered wrong or mistakes, but rather, more or less *efficient* and/or effective in achieving a task goal.
- Changes in swimming tasks occur along a *developmental continuum* from less advanced to more advanced state of efficiency or effectiveness.

# Developmental Perspective *(cont.)*

From a *developmental perspective*, swimming instructors should understand that:

- Each swim learner has unique *personal characteristics* and *aquatic readiness* that interact with different *swim tasks* and different *aquatic environments*
- Swimming learning occurs most effectively when instructors employ *learner-centered constructivist* teaching methods such as *exploration*, *guided discovery*, or *task setting*.

# Developmental Water Competence Perspective…

- is a *change* perspective
- is a *hopeful* perspective
- it recognizes *individual differences*
- it accepts where individuals are (along a *developmental continuum*)
- it sees *clinicians* (e.g., teachers, coaches) as *promoters of change*

# Principles of Developmental Water Competence

Changes associated with a developmental water competence perspective are characterized by:

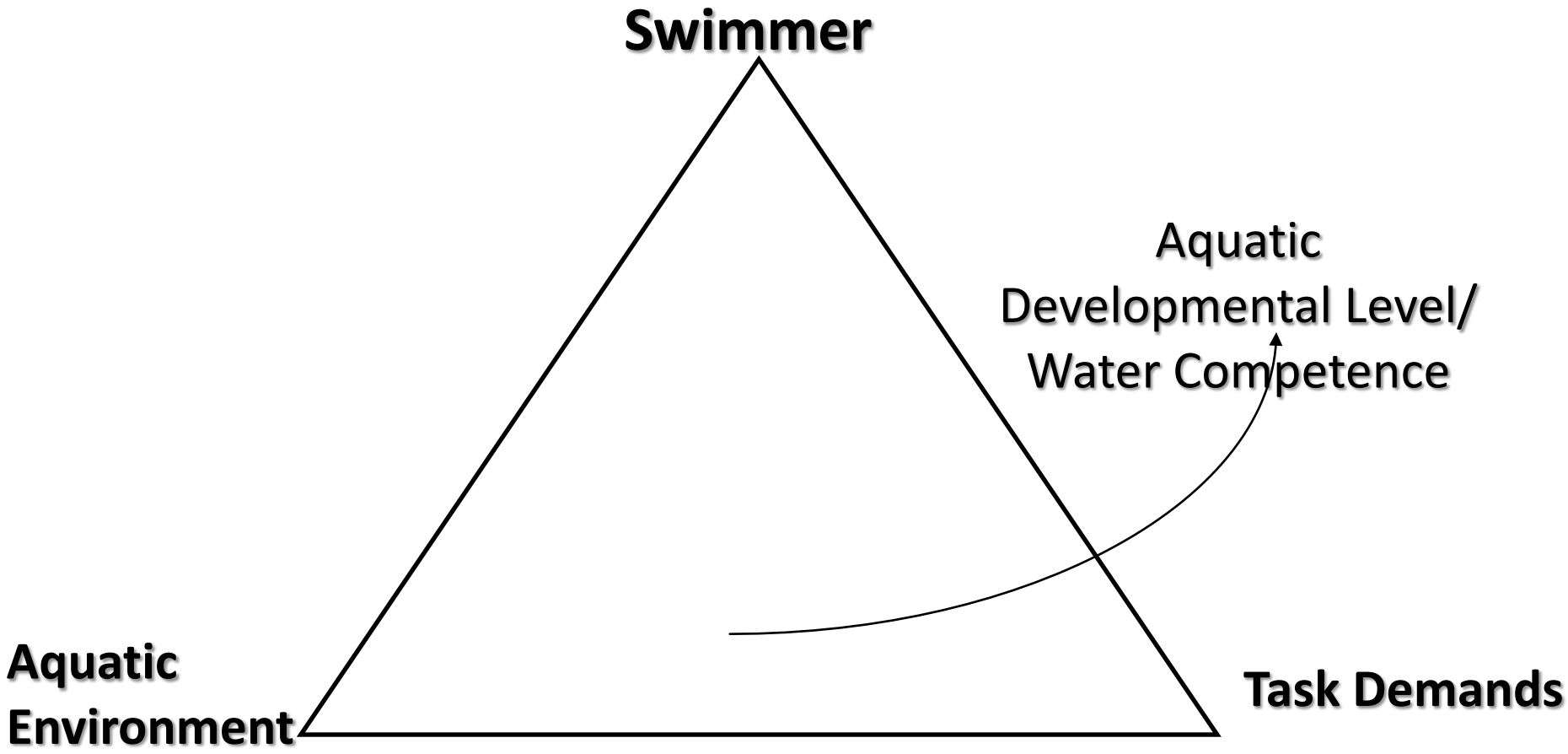
- *Qualitative* shifts in behavior (i.e., *something new*)
- *Ordered* series of changes (usually *cumulative*)
- Complex and *multi-factorial* (no single cause)
- Multi-*directional* change (may progress or regress)
- Unique *individual differences*
- Dynamical process (*person, task, environment interact*)

# Developmental Changes in Water Competence

1. Controlling breathing in and around water
2. Maintaining buoyancy on front, side, back
3. Changing body orientation/position
4. Changing location in water (aka, propulsion/ locomotion)
5. Entering and exiting the water safely

# Constraints: Model Behind Aquatic Changes

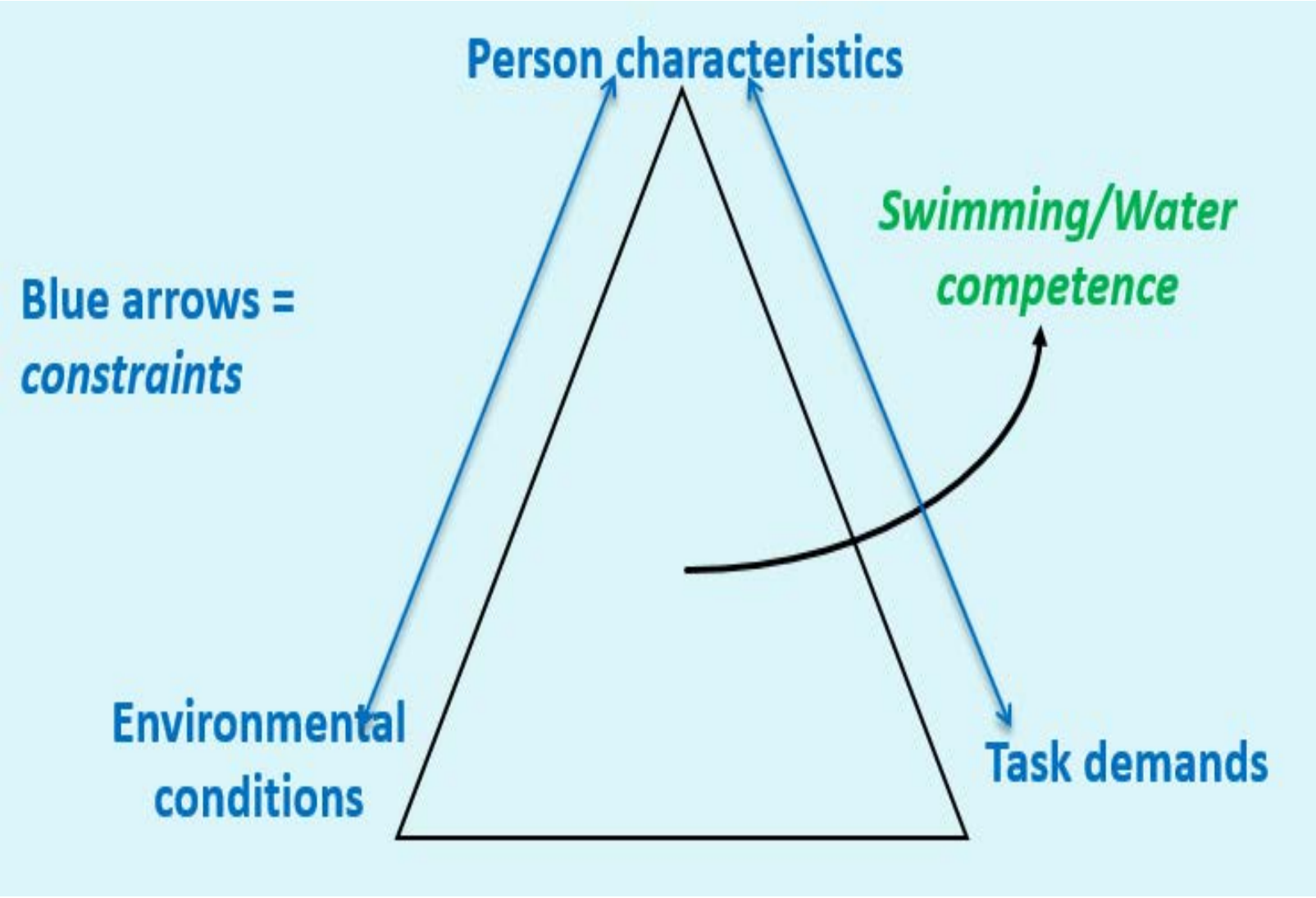
Karl Newell, a researcher at Penn State University, presented a way to think about the *interactions* of person, task, and environment.



# Constraints Model:
# Newell's (1986) Triangle

- The triangle represents the *dynamic system* which leads to the emergence of a particular movement/behavior at a particular time.
- That emergent movement is called a *developmental level* or *degree of water competence*.

# Newell's (1986) Constraints Model




**Personal characteristics:** (age, body size, fitness, experience, nervous system maturation)

**Task demands** (goals, intentions, rules, small equipment)

**Environmental conditions:** (physical conditions; social expectations)

***Constraints = Relationships***

# Selected References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