Context, origin & motor learning : A neurocentric approach to movement/rehab

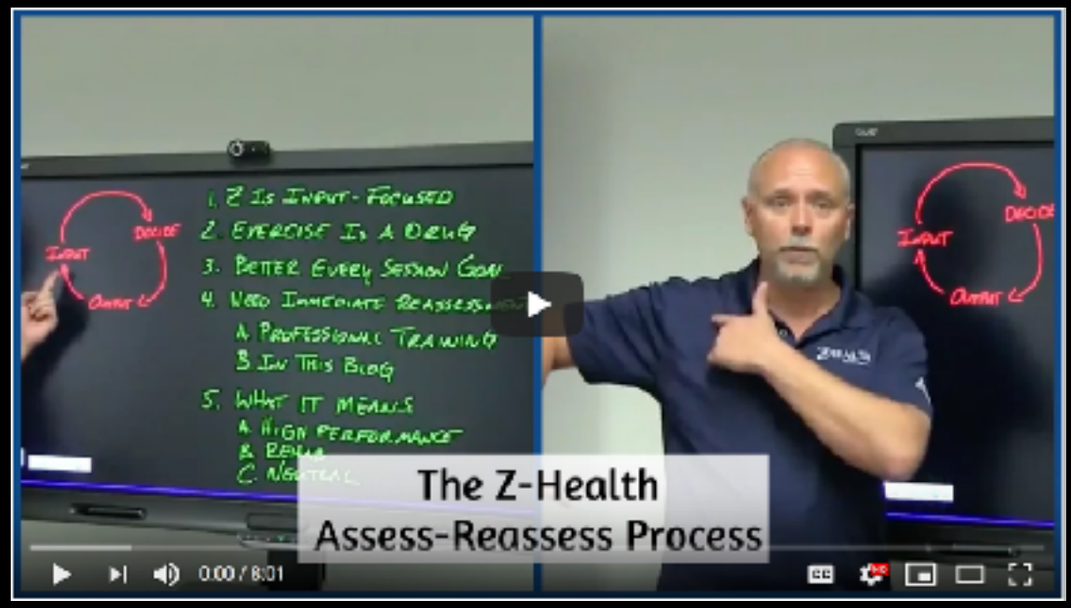
List of

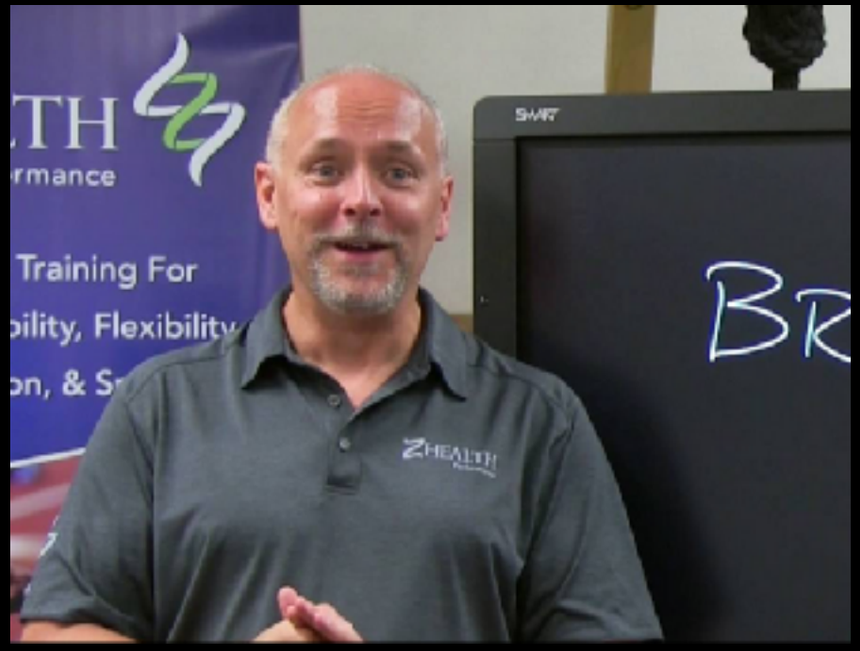
VALUES

Accountability
Achievement
Adaptability
Adventure
Altruism
Ambition
Authenticity
Balance
Beauty
Being the best
Belonging
Career
Caring
Collaboration
Commitment
Community
Compassion
Competence
Confidence
Connection
Contentment
Contribution
Cooperation
Courage
Creativity
Curiosity
Dignity
Diversity
Environment
Efficiency
Equality
Ethics
Excellence
Fairness
Faith
Family
Financial stability
Forgiveness
Freedom
Friendship
Fun
Future generations
Generosity
Giving back
Grace
Gratitude
Growth
Harmony
Health
Home
Honesty
Hope
Humility
Humor
Inclusion
Independence
Initiative
Integrity
Intuition
Job security
Joy
Justice
Kindness
Knowledge
Leadership
Learning
Legacy
Leisure
Love
Loyalty
Making a difference
Nature
Openness
Optimism
Order
Parenting
Patience
Patriotism
Peace
Perseverance
Personal fulfillment
Power
Pride
Recognition
Reliability
Resourcefulness
Respect
Responsibility
Risk -taking
Safety
Security
Self-discipline
Self-expression
Self-respect
Serenity
Service
Simplicity
Spirituality
Sportsmanship
Stewardship
Success
Teamwork
Thrift
Time
Tradition
Travel
Trust
Truth
Understanding
Uniqueness
Usefulness
Vision
Vulnerability
Wealth
Well-being
Wholeheartedness
Wisdom

Write your own:


GUSTAVUS
ADOLPHU


1. Z Is Input-Focused
2. Exercise Is A Drug
3. Better Every Session Goal
4. Need Immediate Reassess
A. Professional Training
B. In This Blog
5. What It Means
A. High Performance
B. Pain
C. Neutral
Input
Output
The Z-Health
Assess-Reassess Process
0:00 / 8:01


Training For
SMART
ZHEALTH


www.amnacademy.com

1) Add in a novel 10 min of material per class and let people know you're doing it

2) Offer to stay after class for questions and demo of new material

3) Offer a Monthly "what I'm learning" email/class/live online session

4) Share your book lists and courses you're taking

5) Start a Curiosity club

6) Sample 30 min sessions at your own "open house"

7) Make a trailer describing yourself and work

8) Identify ideal student/Ideal session: What effect do you hope to deliver?

9) Give them what they want, show them what they need/Connect the dots

10) Educate by way of email newsletters, blogs, social media etc

11) Tell everyone you know you're looking to add more whatever it is (one on one sessions/personal training/multi disciplinary movement)

12) Network like crazy

13) Problem/solution: you're afraid of falling- well I can help you gain real life balance skills- you feel overall muscular tension? I can help you feel more flexible by targeting not just your joints but parts of your brain and other sensory systems, you feel stiff and want to move more fluidly?

what does TMPY offer

and what do we need?

knowledge = power

- what might we be missing and could we incorporate into traditional-ish yoga?
- what falls squarely outside the realm of yoga/too far outside the box?
- is yoga a mind-set?
- by knowing what else we might need/want out of movement for health and expression, we can seek and advise alternatives. We can buff up our offerings to meet some of these needs, root out problematic content/cues, and increase awareness of the scope of this practice.

Defining by/associating with:

- extreme ranges of motion/open-ness bias
- dualism (soul vs body)
- kinesiophobia: fear of movement
- force/adjustment/ correction
- panacea claims: yoga for weight loss, depression, trauma etc
- super-model-ideals marketing
- stereotypical healthy lifestyle trappings

yoga as attidude/approach

- integration
- compassion
- improvement of relationship with self
- presence with what is
- equanimity
- tolerance
- public service
- awareness
- self-regulation
- curiosity/witness/investigation
- examined living
- cultivation of space
- contemplation
- time and space for self-care/ inward focus
- embodiment

lifestyle and culture dictates needs

- screens
- artificial light
- chronic stress
- sitting
- driving
- limited general movement

general physical fitness

UK medical officer's guidelines 2011

The American Heart Association Recommendations for Physical Activity in Adults

For Overall Cardiovascular Health:

At least 30 minutes of *moderate-intensity* aerobic activity **At least 5 days** *per week* for a **total of 150 minutes**

OR

At least 25 minutes of *vigorous* aerobic activity **At least 3 days** *per week* for a **total of 75 minutes**

or a combination of the two

AND

Moderate to HIGH INTENSITY muscle-strengthening activity **At least 2 days** *per week* for additional health benefits

For Lowering Blood Pressure and Cholesterol:

An average of 40 minutes of *moderate- to vigorous-intensity* aerobic activity **3 or 4 days** *per week*

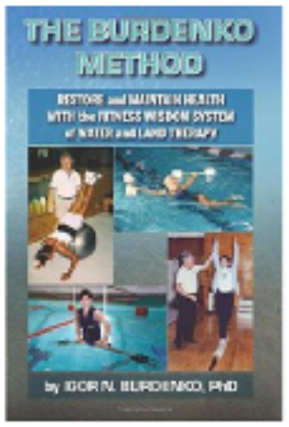
Learn more at **heart.org/ActivityRecommendations**.

IGOR N. BURDENKO PH.D.

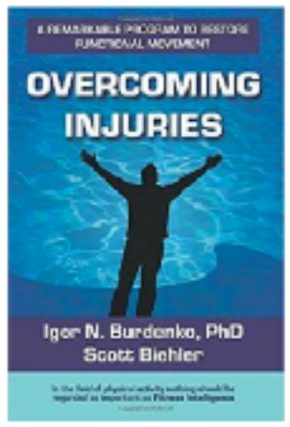
is the founder and chairman of the Burdenko Water and Sports Therapy Institute. In May 2007 Dr. Burdenko was recognized by the Aquatic Exercise Association for his achievement and passion for aquatics as he was recipient of the Global Award for Lifetime Achievement. In August 2017 Dr. Burdenko received the John K. Williams Jr. International Adaptive Aquatics Award and was induced into the International Swimming Hall of Fame. He has worked as a rehabilitation and training consultant to numerous athletes from the NBA, NFL, NHL, U.S. and Russian Olympic Teams, member of the U.S. Handicapped Olympic Team, and top international dancers and figure skaters. He was on the board of directors of The National Youth Sports Safety Foundation for the Prevention of Athletic Injuries and is a past member of the Aquatic Exercise Association Research Committee. He has also written 5 books on conditioning and training as well as has authored over 5 books and over 200 hundred articles while he was in the Soviet Union.

Water is a great healer and the ideal medium for rehabilitation, conditioning, training. The hydrostatic (passive) and hydrodynamic (active) properties of water provide an optimal environment for safe and effective therapy and conditioning. With little or no weight bearing in the water, the injured or deconditioned client is able to return to desired activities quickly and safely.

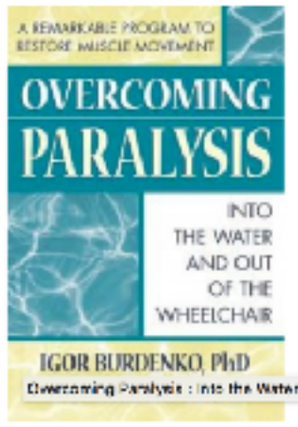
LIBRARY



The Burdenko Method



Overcoming Injuries



Overcoming Paralysis

The Ultimate Power of Resistance
Please contact The Burdenko Institute to order your copy

Burdenko resistance bands (he used surgical tubing) and stick

Novel teaching, motor learning and the context of yoga/group fitness

somatics
qi-gong
functional movement
FRC/kinstretch
yoga with bands
pilates with and w/out equipment
parkour
restorative exercise
axis syllabus
strength & conditioning with external weight
dance

Most people think of regressing and progressing challenge level in very simple terms: i.e. LOADING/forces and/or biomechanics

Shape continuum (isometric)
Speed (yoga- one speed, slow)
Perturbation: The definition of perturbation is an unconscious reaction to a sudden unexpected out side force or movement. For example, while running down a football field suddenly a defender attempted to tackle the ball carrier. The ball carrier reacts by cutting, sidestepping, stopping, and quickly starting again. These are all a reflex activity that occurs within seconds. Training the athlete in restoring or improve reaction times, is referred to as perturbation training.
Complexity/coordination: (Multi/dual tasking) (in yoga we have simple, uni-tasking)
Environment (closed, controlled) (partner would add complexity)
Objects (props add complexity depending on use)
Visual stimulation/factors
Vestibular stimulation/factors
Rhythm factor (none in yoga or somatics, pilates) engaging cerebellum

Professor Emerita Antionette M. Gentile

"The perspective we were bringing, that unless the patient actively moves on his own there will be no reorganization in the nervous system, was quite radical."

— Antoinette Gentile

Prior to the early 1970s, treatment of stroke patients and those afflicted by conditions like Parkinson's had been determined largely by defining the extent of damage to patients' brains. Gentile, whose training encompassed neuro-anatomy, motor control, motor learning and developmental research, focused instead on the impact of environment on brain function and the potential for behavioral change. She was an early champion of the notion of "neuroplasticity," the concept that the brain can reorganize following trauma, shifting functions to new regions.

"Ann hasn't been sufficiently recognized for her contributions, precisely because they have crossed disciplinary boundaries," said her former student, James Gordon, Associate Dean of the Division of Biokinesiology & Physical Therapy at the University of Southern California. "That's trendy now, but she was doing it 30 years ago."

In a 1972 paper titled "A Working Model of Skill Acquisition with Application to Teaching," Gentile argued that neuromotor skills are acquired in distinct stages, with a performer's current stage having implications for teaching or treatment. In her "Taxonomy of Tasks" – now ubiquitous in texts in the field – she grouped tasks according to the structure of the environment in which they are performed. For example, a person walking on flat ground can learn movement by rote, whereas someone walking on varied terrain must develop a more creative ability to produce different kinds of movements.

Gentile also fleshed out theories that skills involve both "implicit" and "explicit" processes. Explicit processes are ones the performer is aware of and can describe, such as braking for a red light. Implicit ones lie beyond conscious awareness – for example, the balancing required to ride a bike.

Gentile applied this conceptual framework to physical rehabilitation, arguing that while much early learning occurs in the implicit realm, a patient's cognitive abilities determine what treatments will be successful. Again, her message ran counter to received wisdom, which held that recovery was something dictated by the agency of the therapist.

required that you generate 25,000 different patterns, each one uniquely organized to fit the diverse environmental conditions. So my story to the physical educators was, 'You have to put them in an open environment right from the start.' They thought that was outrageous – 'Are you saying that a student learning tennis should be given a racquet and a ball and start to play tennis immediately?' I said, 'Exactly.' 'Are you saying you wouldn't teach them the form?' 'Yes, that's right.'"

Ultimately Gentile's Taxonomy reshaped rehabilitation treatment.

"Her Taxonomy of Tasks changed the way that physical therapists evaluated their patients in order to understand better the nature of the patients' impairments," said Jean Held, a physical therapist and former student of Gentile's who has since retired from the University of Vermont as Associate Professor of Physical Therapy Emerita."In addition, the Taxonomy has helped therapists to understand better how to set up therapy sessions in order to help patients improve their function; i.e., how to structure their environment during the therapy session."

"If the task involves objects and people that don't vary, then you can set practice that way, but if a task involves motion in the environment and that motion necessarily changes from trial to trial, then practice has to be structured differently," Gentile recalled in a 2009 interview for TC's Oral History Project. She added that this idea met with stiff resistance from physical educators such as tennis instructors. "They used to start by teaching the 'perfect movement,' with students practicing a swing with no ball and no racquet. The problem was when you got in a game, you had one swing and the task

Taxonomies of Motor Skills.

A taxonomy is a classification system. A number of taxonomies for motor skills exist based upon:

- Level of Precision
- Task Organization
- Predictability of the performance environment
- Gentile's multi-dimensional system.

Gentile's Taxonomy: Developing and Assessing Appropriate Skill Progressions

JONES, JACKSON, HARTMAN, & STANEC

BOISE STATE UNIVERSITY

Pacific University Oregon

Gardner-Webb University

St. Francis Xavier University

AMPA 2009
Tampa Convention Center
March 31 - April 4, 2009

124th American Alliance for Health, Physical Education, Recreation and Dance National Convention & Exposition

MANY VOICES ... ONE MISSION

In partnership with Southern District AAHPERD and Florida AHPERDS

Gentile's Taxonomy (2000)

Every action we carry out it is a result of the complex interaction between the performer, task, and the environment

Closed Skills	Open Skills
Highly Predictable	Unpredictable
Stable Environments	Variable Environment

Gentile's Taxonomy: 4 Questions

Environmental Context

1. Is the environmental context (i.e., regulatory conditions) in-motion or stationary?
2. Does the skill change from trial-to-trial (i.e., intertrial variation)?

Action Function

1. Does the performer move from one location to another while performing this skill (i.e., body transport)?
2. Does the performer manipulate an object in this task?

		BODY STABILITY		TRANSITION (Quasi-mobility)		BODY TRANSPORT	
		No object manipulation	Object Manipulation	No object manipulation	Object Manipulation	No object manipulation	Object Manipulation
CLOSED ENVIRONMENT	**No variability**	Stand in prosthesis unsupported in the parallel bars in a quiet PT gym	Stand in prosthesis unsupported while putting on jacket in a quiet PT gym	Practice the sit-to-stand transition from a single chair with armrests in a quiet PT gym	Practice the sit to stand transition from the same chair while managing axillary crutches	Walk the length of the parallel bars at comfortable speed, turn around, repeat	Walk forward with crutches using a 2-point gait pattern in an empty hallway
	Trial variability	Stand in prosthesis in parallel bars with diagonal weight shifts on command	Stand in prosthesis in parallel bars catching ball from different directions and speeds	Transfer to and from wheelchair, toilet, and shower seat, moving to left and right in random order	Transfer between seating surfaces of different heights while holding a full glass of water in a quiet PT gym	Practice stepping in different directions and distances in the parallel bars	Walk up to a closed door, opening it, and walking through while using a cane
OPEN ENVIRONMENT	**No variability**	Remain standing upright as people walk by at regular intervals from similar directions	Retrieve an object repeatedly from the same spot on the floor in a corner of a busy PT gym	Prac[38]noving from standing to sitting using arms in a pre-positioned chair in the cafeteria of the rehabilitation hospital	Move from standing to sitting and vice versa from a rocking chair while managing crutches	Practice ascending and descending a set of training stairs in the corner of a busy PT gym	Approach and ascend a full flight of stairs in a quiet hallway, using bilateral canes
	Trial variability	Remain upright while standing in line in a busy public area	Retrieve various randomly dropped objects throughout an active PT gym	Rise repeatedly from a seat in the movie theater so that other people (of various height and weight) can move past into the row	Scoot sideways while sitting, managing the blankets on a soft mattress so that grandchildren can climb into bed to hear a story	Ascend and descend stairs using the railing in a busy public space	Walk from car to supermarket door, pushing the grocery cart across the busy parking lot

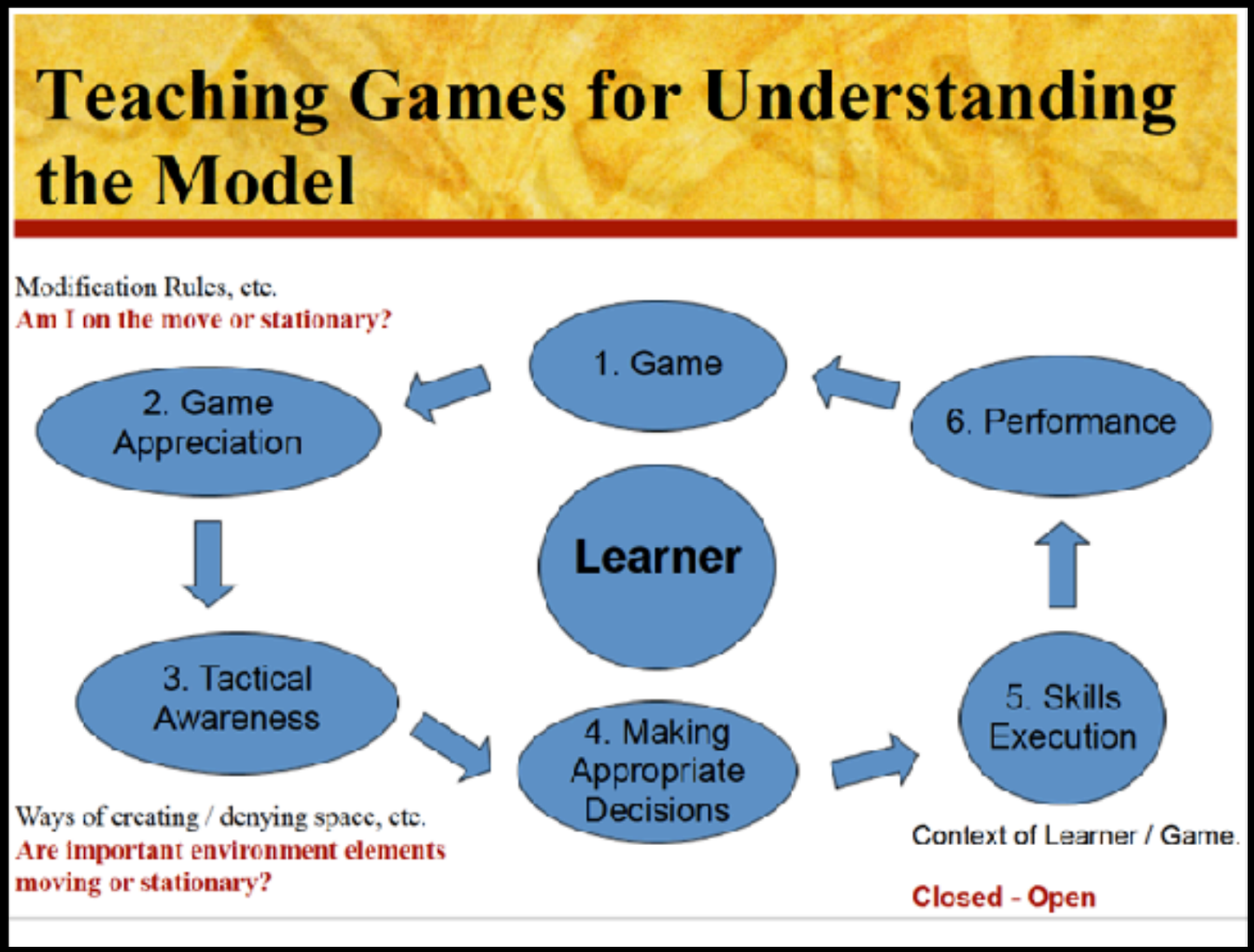
FIGURE 3-5 Examples of therapeutic activities for an individual learning to use bilateral transtibial prosthesis, based on a modified version of Gentile's Taxonomy of Movement Tasks.

Gentile's Taxonomy (2000)

		Action Function			
		Body Stability		Body Transport	
Environmental Context		No Object Manipulation	Object Manipulation	No Object Manipulation	Object Manipulation
Stationary Regulatory Conditions	No Intertrial Variability	1A	1B	1C	1D
	Intertrial Variability	2A	2B	2C	2D
In-Motion Regulatory Conditions	No Intertrial Variability	3A	3B	3C	3D
	Intertrial Variability	4A	4B	4C	4D

Adapted from Magill (2007)

Teaching Games for Understanding the Model



Designing Practice / Learning Environments (Adams, 1999)

- It is suggested that students should experience approximately 80% success.
- How do we create success for our students?
  - Modify skills for all levels (beginner, intermediate, advanced)
    - Extensions - inviting students to perform variations that make the skill easier or harder.
    - Challenges - giving a measurable task that focuses on mastery
    - Choices- inviting students to become more actively engaged in the learning process via self-regulation.

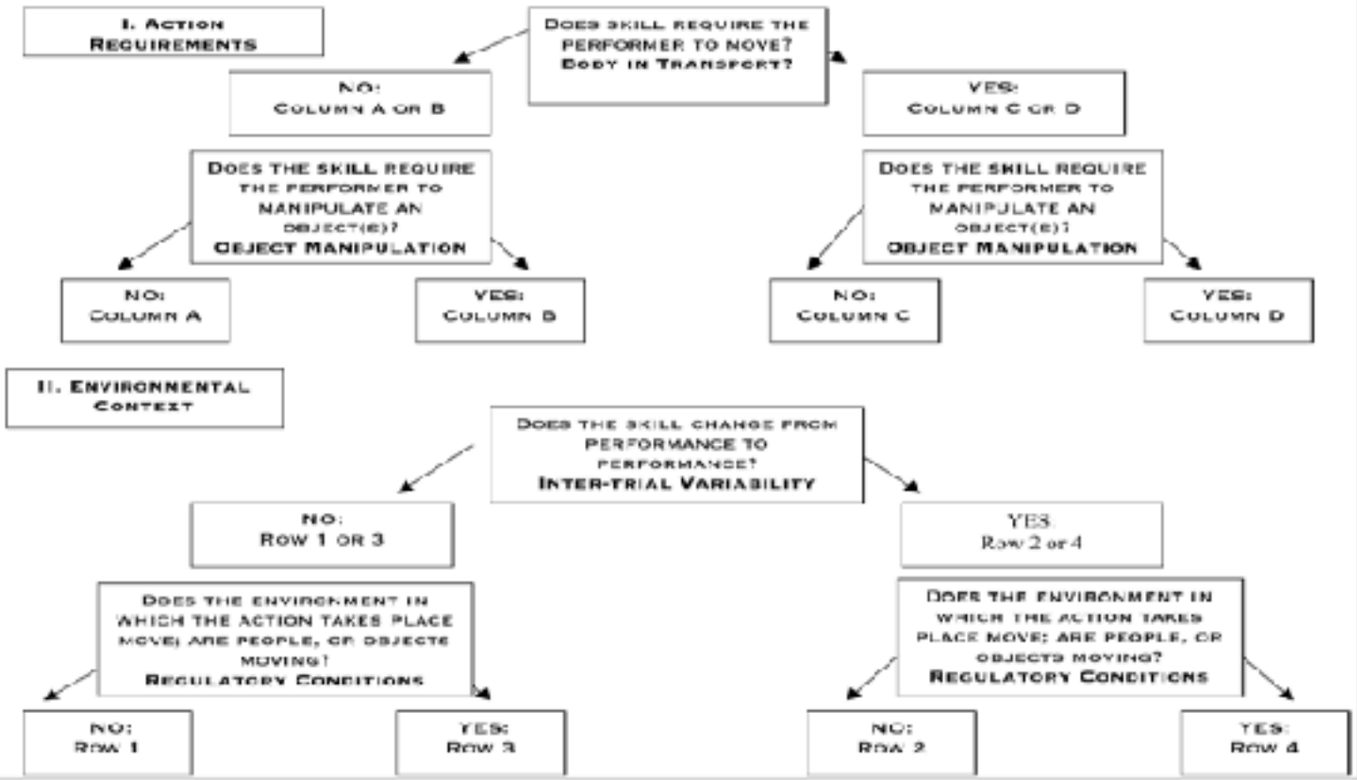
Gentile's Taxonomy

	Body Stability; No Object Manipulation	Body Stability; Object Manipulation	Body Transport; No Object Manipulation	Body Transport; Object Manipulation
Stable Environment; No Inter-trial Variability (ITV)	1 Free Throw	2 Penalty shot in field hockey to same location each attempt	3 Running Long Jump	4 "Happy Gilmore" on driving range to no target
Stable Environment; ITV	5 Softball Pitcher	6 *Tennis Serve - Expert*	7 High Jump	8 Pole Vault
Moving Environment; No ITV	9 Riding on an escalator	10 Hitting a baseball from a pitching machine at 1 speed/location	11 Running on a treadmill at variable speeds	12 *Hitting ground - strokes from a tennis machine while one the move*
Moving Environment, ITV	13 Catcher guarding the plate and tagging out a baserunner	14 *Tennis Serve - Novice*	15 Running a cross country race	16 *Return of Serve Groundstrokes*

Gentile's Taxonomy of Motor Skills

Environmental Context \ Action Function	Body Stability		Body Transport	
	No Object Manipulation	Object Manipulation	No Object Manipulation	Object Manipulation
Stationary Regulatory Conditions and No Intertrial Variability	1A Body stability No object Stationary regulatory conditions No intertrial variability - Standing alone in a room - Holding a yoga pose	1B Body stability Object Stationary regulatory conditions No intertrial variability - Brushing teeth alone at home every day - Shooting basketball free throws	1C Body transport No object Stationary regulatory conditions No intertrial variability - Climbing stairs - Running around an empty track	1D Body transport Object Stationary regulatory conditions No intertrial variability - Climbing stairs while holding a baby - Practicing penalty shots without goalie
Stationary Regulatory Conditions and Intertrial Variability	2A Body stability No object Stationary regulatory conditions Intertrial variability - Standing on different surfaces - Doing handstands on different apparatus	2B Body stability Object Stationary regulatory conditions Intertrial variability - Washing dishes standing at a sink - Putting golf balls from var. locations	2C Body transport No object Stationary regulatory conditions Intertrial variability - Walking on different surfaces - Agility drills through diff. obstacle courses	2D Body transport Object Stationary regulatory conditions Intertrial variability - Walking on different surfaces carrying bags - Pole vaulting over bars set at diff. heights
In-Motion Regulatory Conditions and No Intertrial Variability	3A Body stability No object Regulatory conditions in motion No intertrial variability - Walking on treadmill at a constant speed - Riding a mechanical bull; constant motion	3B Body stability Object Regulatory conditions in motion No intertrial variability - Walking on treadmill at a constant speed while using iPhone - Catching a series of balls machine-thrown	3C Body transport No object Regulatory conditions in motion No intertrial variability - Standing on a moving escalator at a constant speed - Sprinting to top of an escalator	3D Body transport Object Regulatory conditions in motion No intertrial variability - Standing on moving escalator holding a cup of water - Running to hit tennis ball machine projected
In-Motion Regulatory Conditions and Intertrial Variability	4A Body stability No object Regulatory conditions in motion Intertrial variability - Walking on treadmill at different speeds - Cheerleader on a swaying teammate.	4B Body stability Object Regulatory conditions in motion Intertrial variability - Walking on treadmill, diff. speeds, reading - Catching softballs thrown by a teammate	4C Body transport No object Regulatory conditions in motion Intertrial variability - Walking in a crowded mall - Avoiding being caught in a game of tag	4D Body transport Object Regulatory conditions in motion Intertrial variability - Walking in crowded mall carrying a baby - Practicing soccer plays w. ball and defenders

Gentile's Taxonomy: Flowchart



Modified from Schmidt & Wrisberg (2008)

Basketball Lay-Up (with no defender)

		Action Function			
		Body Stability		Body Transport	
Environmental Context		No Object Manipulation	Object Manipulation	No Object Manipulation	Object Manipulation
Stationary Regulatory Conditions	No Intertrial Variability	1A	1B	1C	1D
	Intertrial Variability	2A	2B	2C	2D
In-Motion Regulatory Conditions	No Intertrial Variability	3A	3B	3C	3D
	Intertrial Variability	4A	4B	4C	4D

Basketball Lay-Up (with no defender)

Action Function

Environmental Context		Body Stability		Body Transport	
		No Object Manipulation	Object Manipulation	No Object Manipulation	Object Manipulation
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	Intertrial Variability	2A	2B	2C	2D
In-Motion Regulatory Conditions	No Intertrial Variability	3A	3B	3C	3D
	Intertrial Variability	4A	4B	4C	4D

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How would you categorize….

- Juggling

		Action Function			
		Body Stability		Body Transport	
Environmental Context		No Object Manipulation	Object Manipulation	No Object Manipulation	Object Manipulation
Stationary Regulatory Conditions	No Intertrial Variability	1A	1B	1C	1D
	Intertrial Variability	2A	2B	2C	2D
In-Motion Regulatory Conditions	No Intertrial Variability	3A	3B	3C	3D
	Intertrial Variability	4A	4B	4C	4D