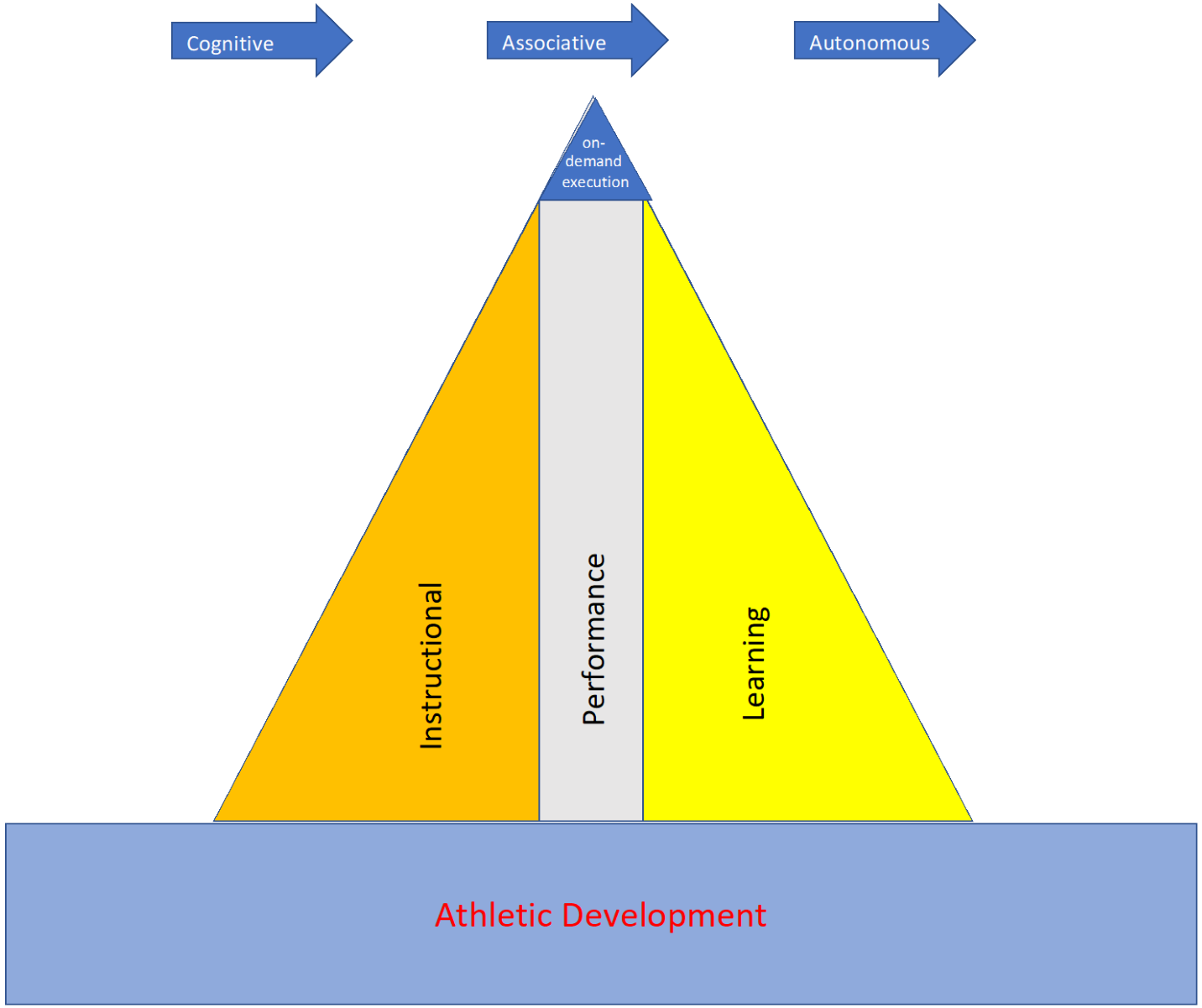
Sasha’s Visual of MOTOR LEARNIG terms



Performance

“….observed behaviour …”

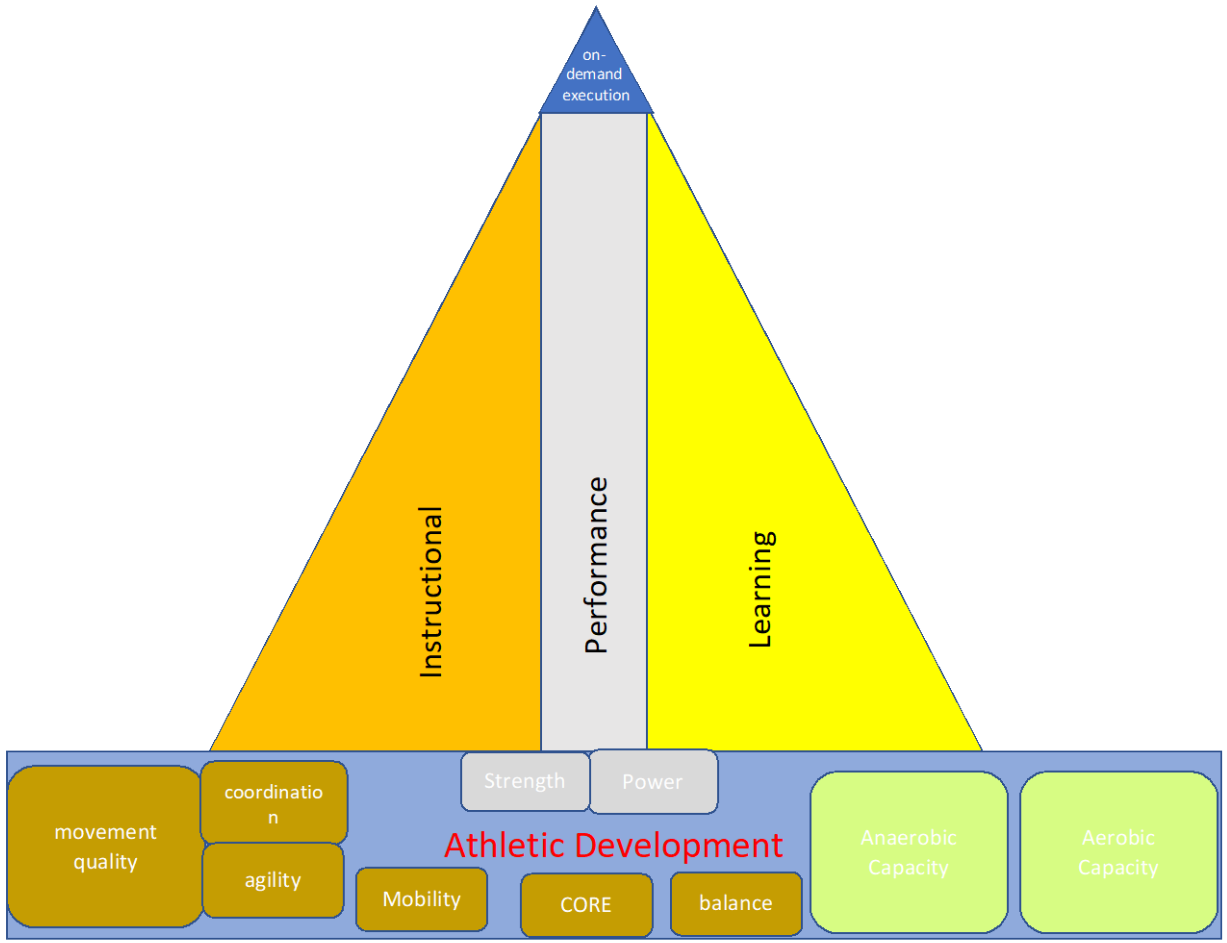
Learning

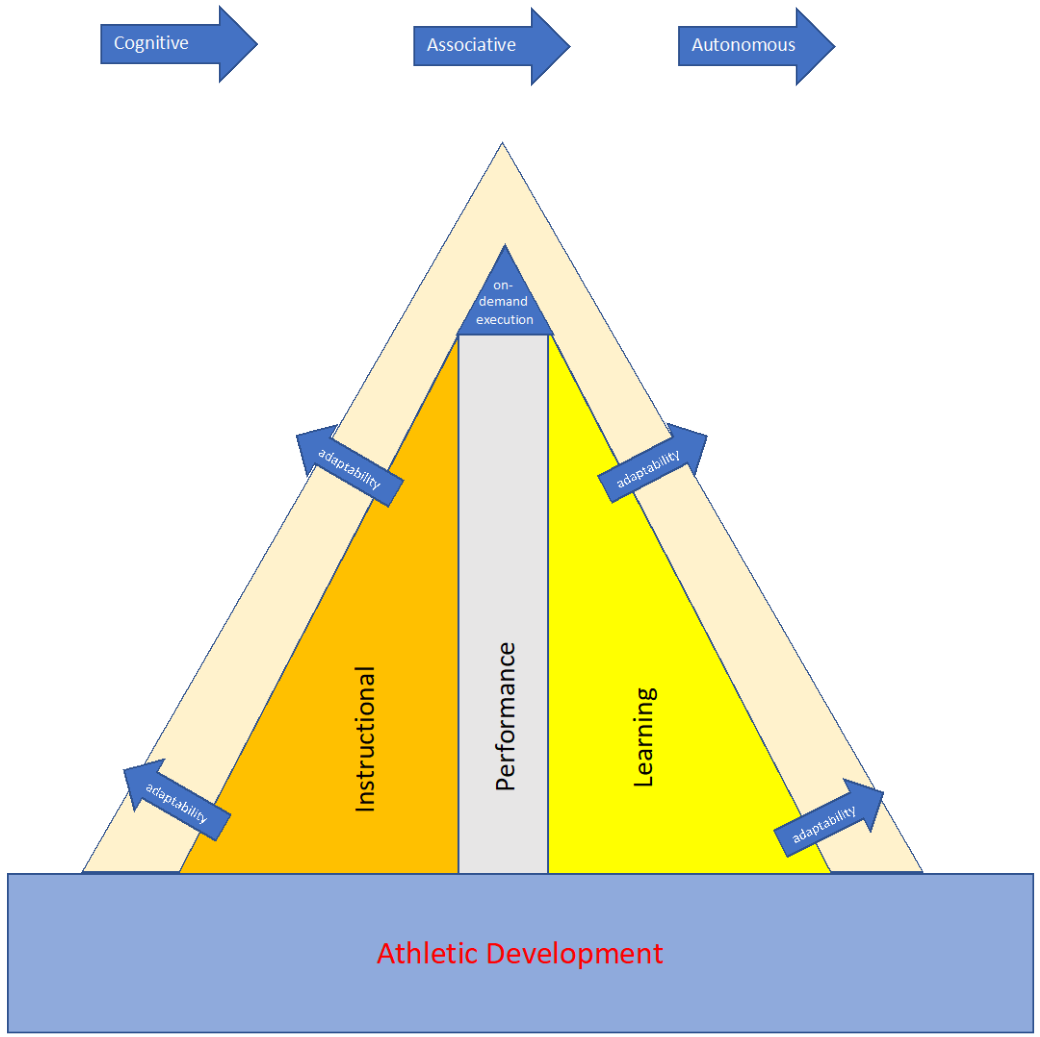
“….a set of processes associated with practice or experience that leads to a relatively permanent change in the capability for movement…”

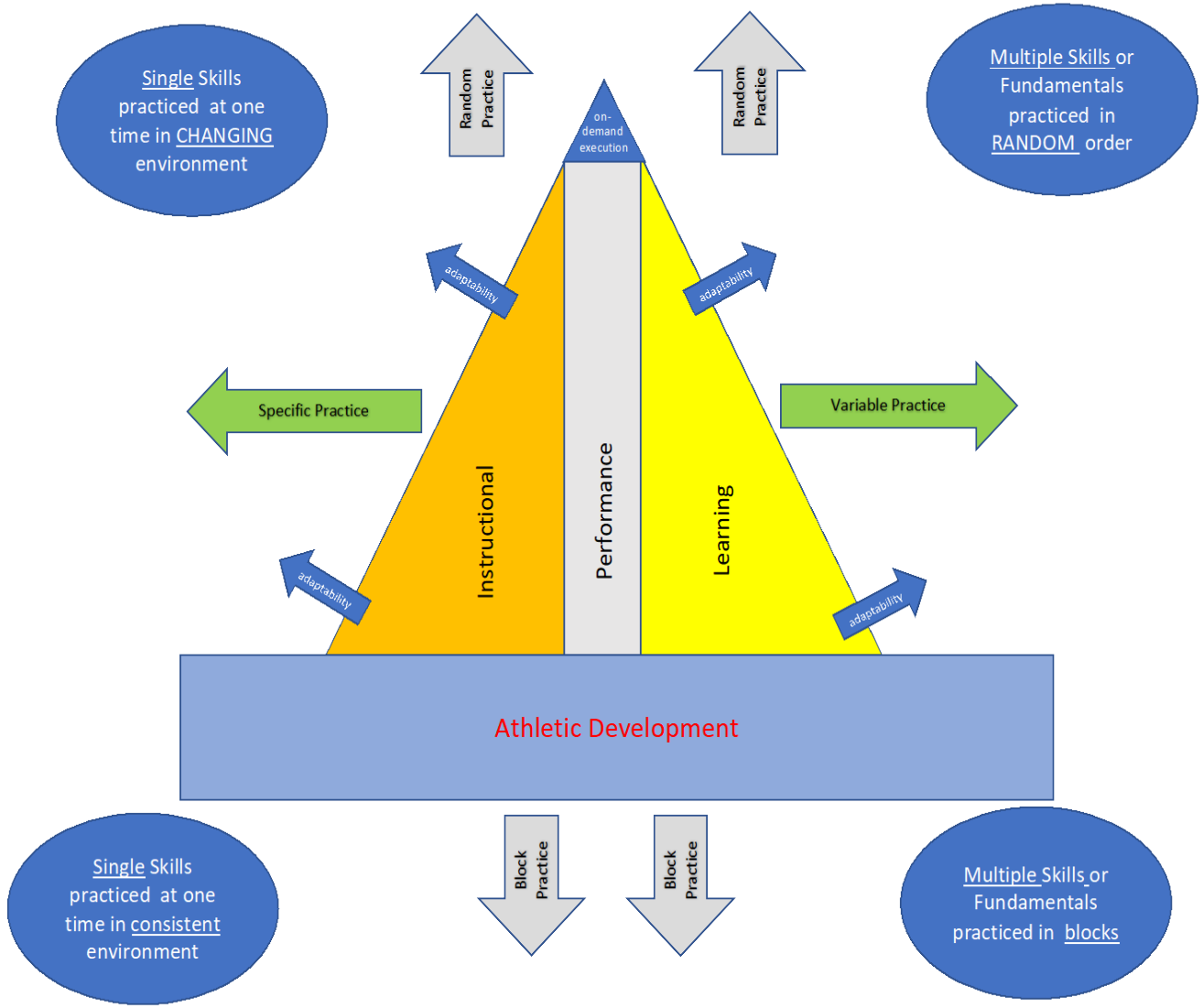
Cognitive	**Actions are slow, inconsistent and inefficient**	• **Movements are controlled through conscious thoughts** • **Significant cognitive activity**
Associative	Actions become movements that are more fluid, reliable and efficient.	• Some aspects are still controlled consciously while other are becoming automatic. • Less cognitive thoughts
Autonomous	Actions are becoming skills. They are precise, consistent and efficient.	• Cognitive thought is minimized or eliminated. • Control is automatic

Fitts and Posner- Skill Acquisition Theory (1967)

- Freedom of expression
  - while adapting to the three corner stones of fast ski racing:
  - And they are?
    - Pressure in the fall line
    - Shortest path of the center of mass
    - Reduce drag


on-demand execution
Instructional
Performance
Learning
movement quality
coordination
agility
Strength
Power
Athletic Development
Mobility
CORE
balance
Anaerobic Capacity
Aerobic Capacity


Cognitive
Associative
Autonomous
on-demand execution
adaptability
adaptability
adaptability
adaptability
Instructional
Performance
Learning
Athletic Development


Single Skills practiced at one time in CHANGING environment
Random Practice
Random Practice
Multiple Skills or Fundamentals practiced in RANDOM order
on-demand execution
adaptability
adaptability
Specific Practice
Variable Practice
Instructional
Performance
Learning
adaptability
adaptability
Athletic Development
Block Practice
Block Practice
Single Skills practiced at one time in consistent environment
Multiple Skills or Fundamentals practiced in blocks

- Specific Practice – repetitive practice of a skill under constant practice conditions

- Variable Practice – variety of skills practiced within different situations.

Drills
Grid Work

Small-sided
Games

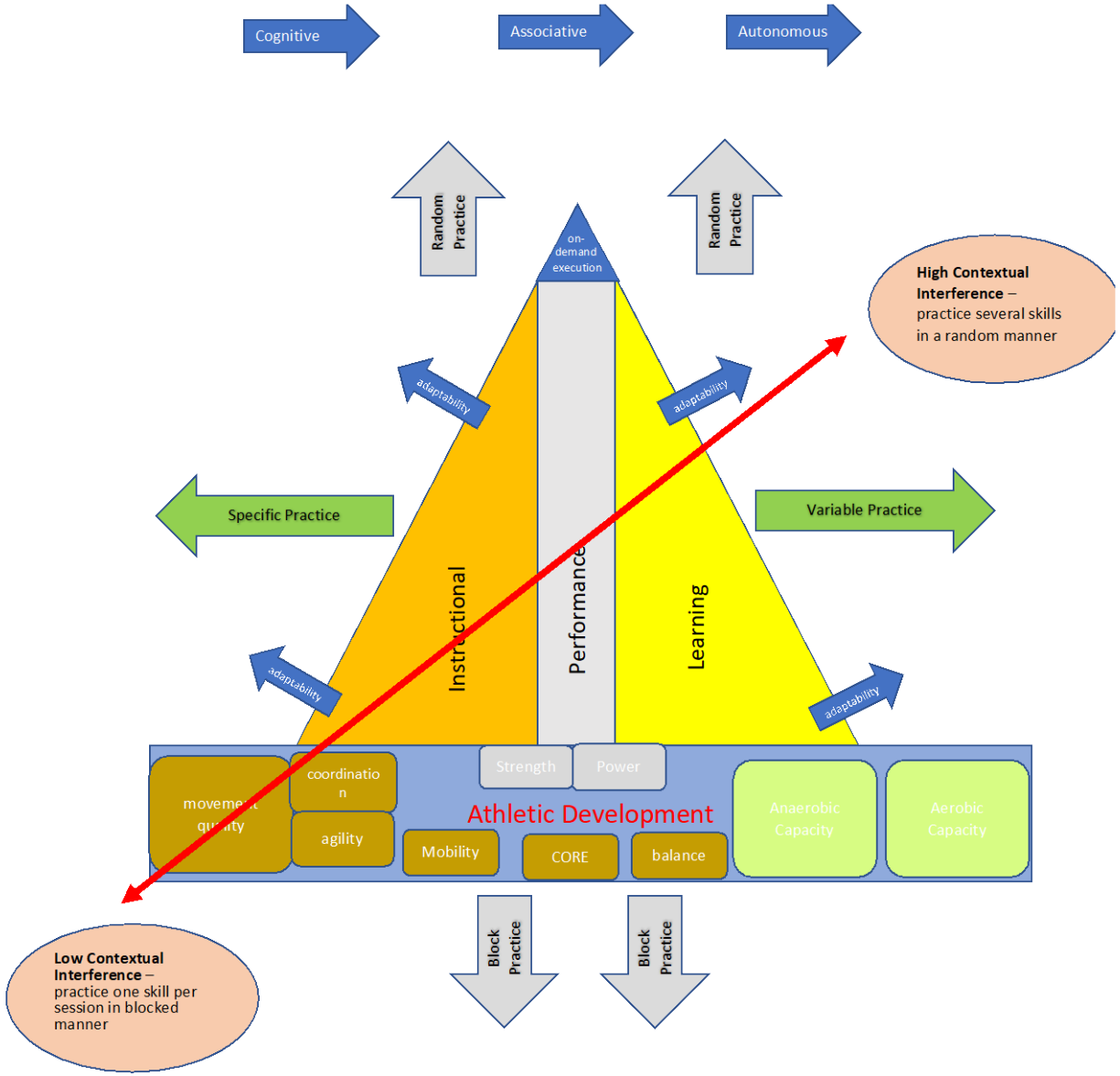
Block vs Random

Drills
Grid Work

Small-sided
Games

Performance vs. Learning

Instructional Phases	Performance	Learning
Convey Information	Always demonstrate Lots of instruction	Infrequently
↓		
Structure Practice	Blocked/constant practice	Random/variable practice
↓		
Provide Feedback	Often and detailed	Infrequent and descriptive


Cognitive
Associative
Autonomous
Random Practice
Random Practice
on-demand execution
High Contextual Interference – practice several skills in a random manner
adaptability
adaptability
Specific Practice
Variable Practice
Instructional
Performance
Learning
adaptability
adaptability
Strength
Power
coordination
agility
Athletic Development
Mobility
CORE
balance
Anaerobic Capacity
Aerobic Capacity
Block Practice
Block Practice
Low Contextual Interference – practice one skill per session in blocked manner

Contextual Interference

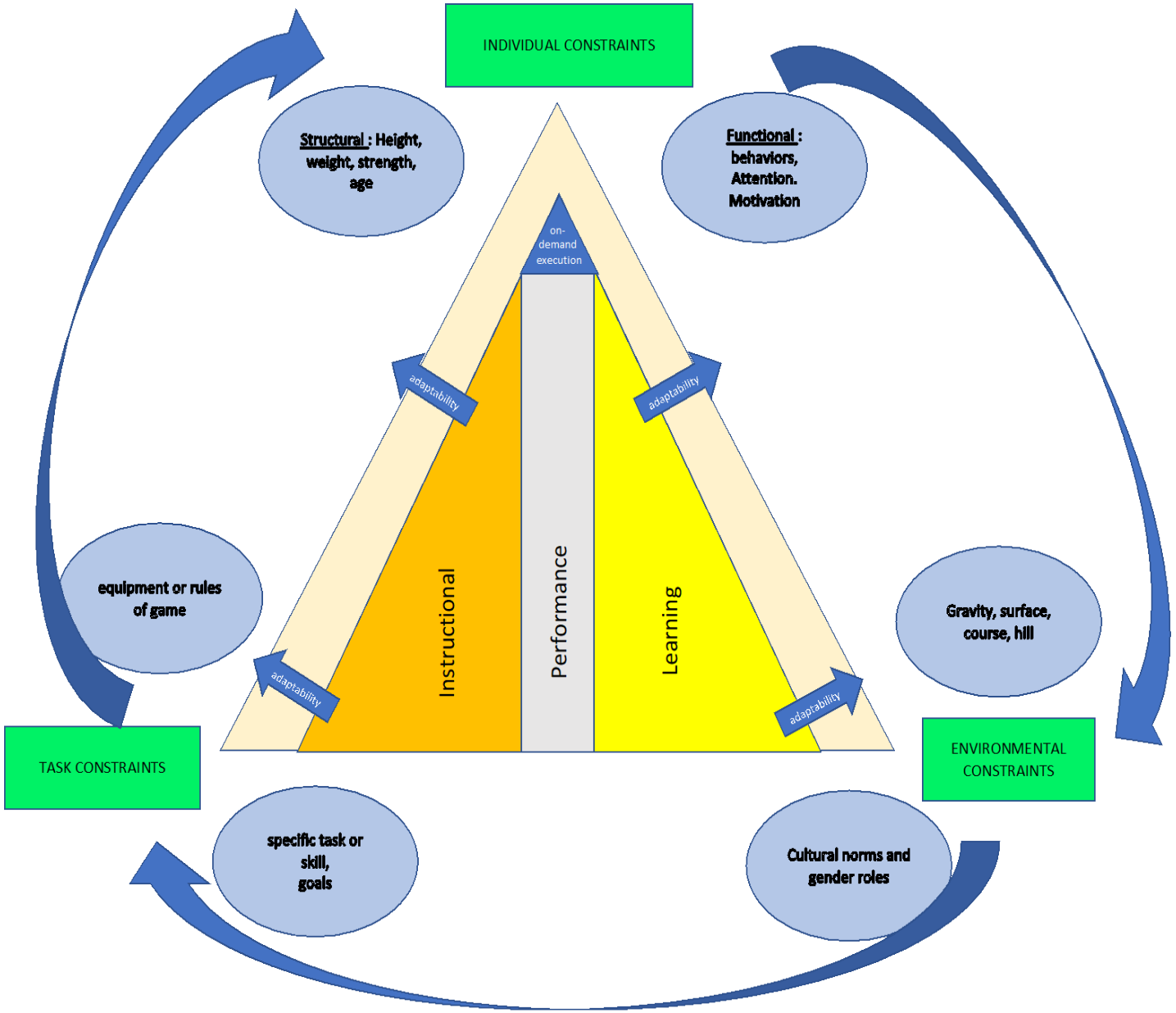
Single Skill
Blocked Practice

Multiple Skills
Blocked Practice

Multiple Skills
Random Practice

Contextual Interference

- LCI better for performance, HCI better for learning
- Benefits of HCI greater when skills differ more markedly
- **Variability of practice and HCI can be combined for optimal learning**



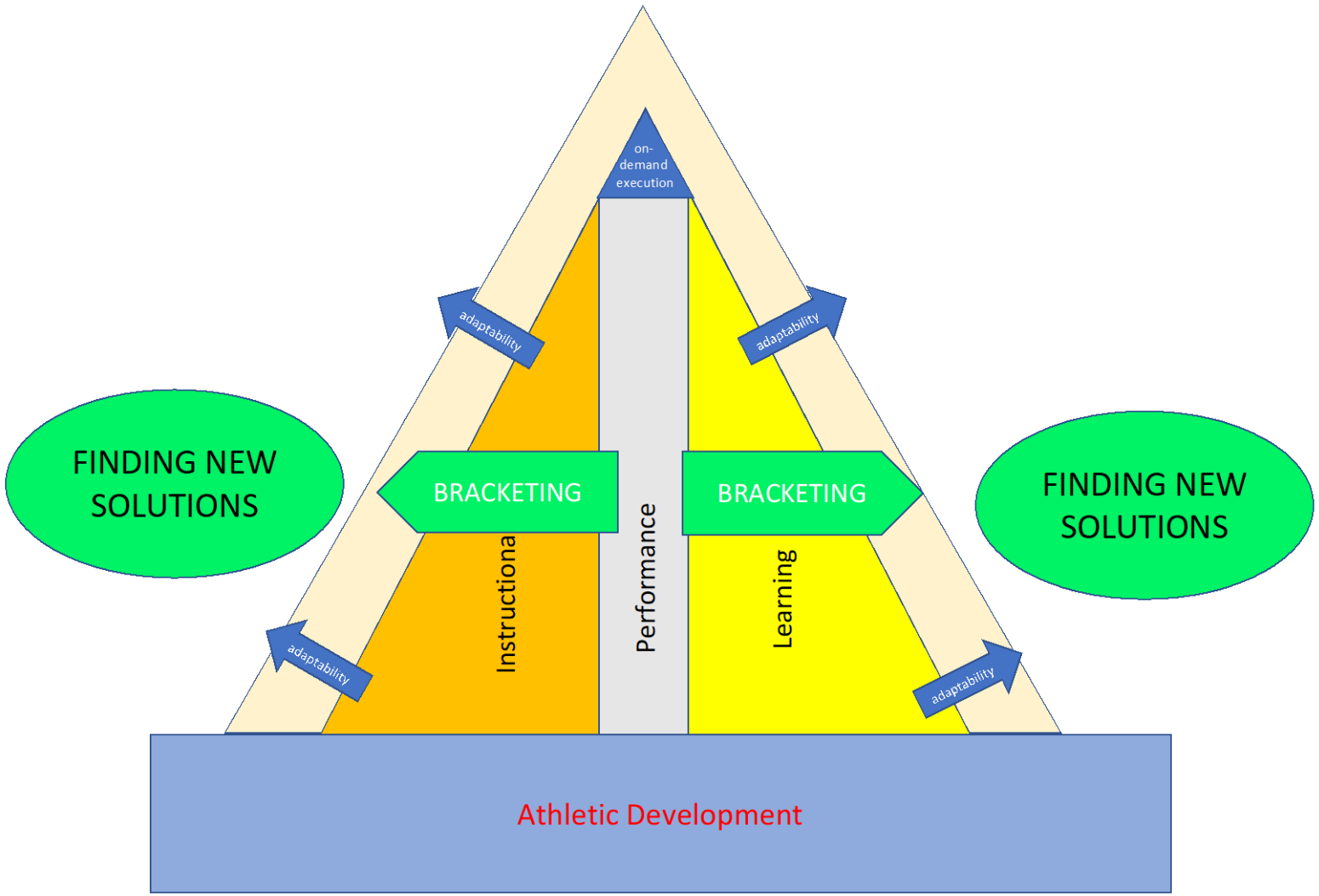
Constraints are factors that limit, contain or help shape the development of movement

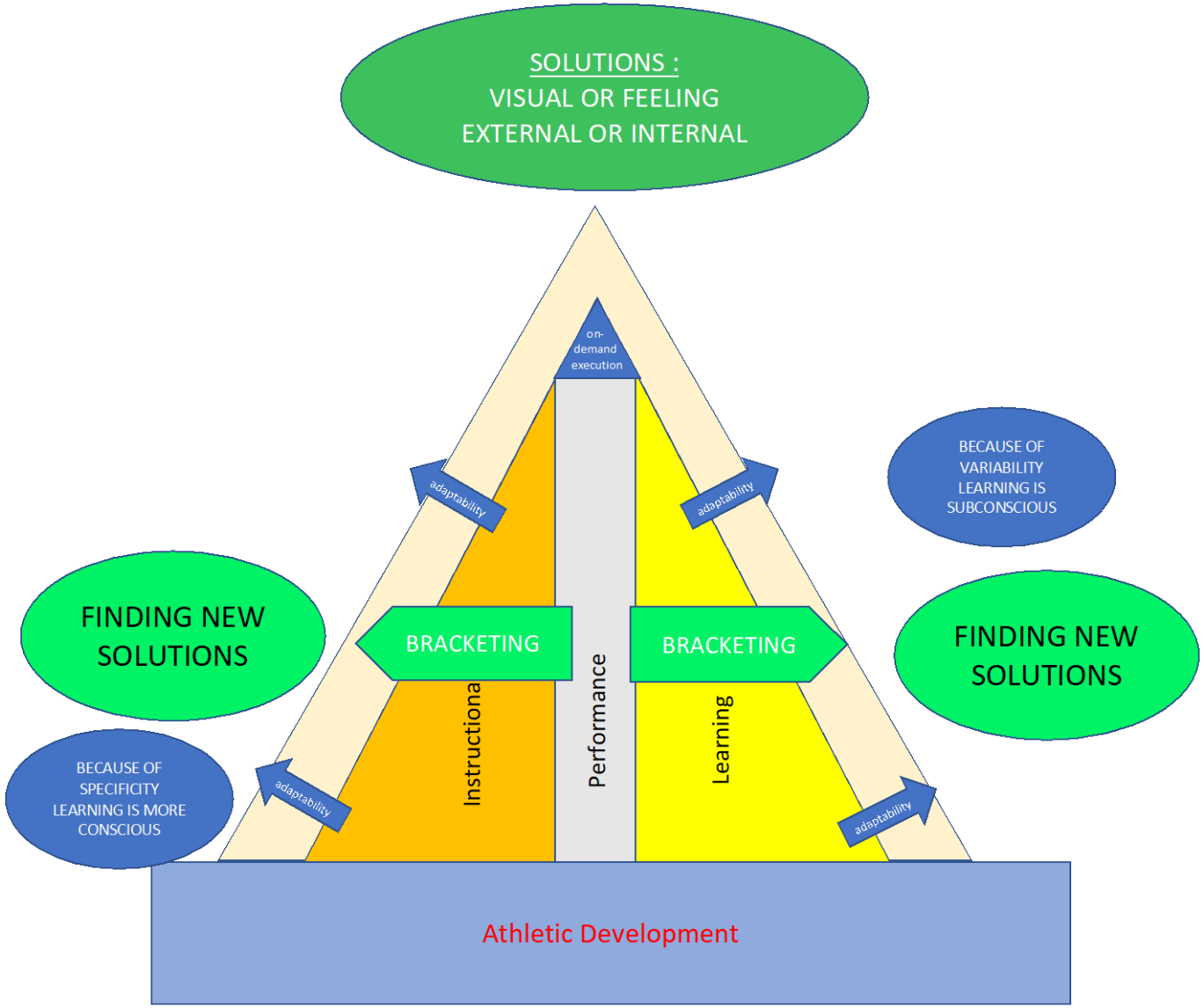
A constraints-led approach is based around the idea that movement is influenced by a dynamical system of interacting constraints on either the task, performer or environment. By definition, a *constraint is a boundary which encourages the learner to emerge with certain behaviours.*

- a **task** constraint relates to the activity in terms of the goal, the equipment or rules.
- a **performer (athlete)** constraint involves unique structural characteristics including physiological, psychological and emotional aspects.
- an **environmental** constraint is often very difficult to change and involves gravity, ambience or temperature and socio cultural factors.

*****WITHIN A CONSTRAINTS-LED APPROACH, A KEY FACTOR IS HOW COACHES MANIPULATE THE ABOVE CONSTRAINTS IN ORDER TO ENCOURAGE THE EMERGENCE OF DESIRED SKILLS*****

- Devine, Thomas (2017). http://www.tdgolfcoach.com/learning/constraints-led-coaching-why/


on-demand execution
adaptability
adaptability
FINDING NEW SOLUTIONS
BRACKETING
BRACKETING
FINDING NEW SOLUTIONS
Instructiona
Performance
Learning
adaptability
adaptability
Athletic Development


SOLUTIONS :
VISUAL OR FEELING
EXTERNAL OR INTERNAL
on-demand execution
adaptability
adaptability
BECAUSE OF VARIABILITY LEARNING IS SUBCONSCIOUS
FINDING NEW SOLUTIONS
BRACKETING
BRACKETING
FINDING NEW SOLUTIONS
BECAUSE OF SPECIFICITY LEARNING IS MORE CONSCIOUS
adaptability
Instructiona
Performance
Learning
adaptability
Athletic Development

- Clear task
- Obstacles are set and used to challenge in a specific way
  - Certain fundamentals or skills are needed to complete task
  - Allow for freedom of expression to complete task
- Changes in equipment can be used as well
  - GS skis for panel SL
  - 1 ski SL
  - Nordic skis
  - Skis on skating rink
- Athletes should instantly know if they are accomplishing task or not

- Coach lead training
- On own training / practice
- Play “free ski” the whole mountain
  - Bell to bel
- Other exposures

Deliberate Practice- Anders Ericsson

break down the skills "fundamentals" that are required to be expert

focuses on improving those skill chunks during practice
paired with immediate coaching feedback.

continually practicing a skill at more challenging levels with the intention of mastering it."

TIME	EVENT	Desired Outcomes & OBJECTIVES	Content	CONSTRAINTS	What is "Good"	& coaching points
Body warm up						
Warm up Ski						
Lane 1						
	SL brush	Balance atheltiec stance	hop turns	2 x 10 : .75 brushes	single pole touch, rhythm jump	encourage
	SL Brush	Upper and lower body seperation	quick turns in fall line	2 x 20 : 1.75 brushes picket fence	blanced skiing with pole plant	are the legs turning more than body
	SL Stub	Balance atheltic stance	tight stubbies course	1x 20: 4 meters slight turn	carving	is upper body facing down the hill
	Pole hopper	active weight transfere	agility course lateral step on road flat	pole hoppers on ground step over	balanced from one foot to other	encourage
	SL brush	Upper body diciplince	poles in hip crease	1x 30 1.75 brush picket fence	all motion is in the legs	how much are the poles moving
	Pannel	Carving clean turns	no touching gates ski to wall	1 x 20 13m pannel SL	balanced top of turn	how deep are they going
Lane 2	SL gates	Self Expression	normal rhythm SL	1x 30 12 meter SL	Pressure in the fall line	let them express them selves
	SL Pannel	Balanced atheltic stance	No touching the gates ski to wall	1x20 10 meter pannel SL	balanced dymnic sking	where is blance point
	SL	Balance atheltic stance	carving clearn turns in balance	1 x 20 16 meter SL very turny	maintain balance on outside	upper body placement
	SL stubbies	active weight transfere	dynamic sking from one ski to the other	1x20 6 meter stubies - turny	very active skiing	where is the weight transfere
	SL - spine	suck switch to maintain snow contact	skiing rhythm SL through spine	1x20 11 meter SL	skis stay on the snow	activly absorbe and extend
	Rollers	Balance atheltic stance	free ski in the rollers	just the rollers no wickets	Rhythm and tempo maintained	are they in blance?
Lane 3						
	SL	Self expression	normal SL on pitch	1x20 10 meter SL even rhythm		
	SL	Balance atheltic stance	carving clearn turns in balance	1 x 20 14 meter SL very turny		
	SL	Active weight transfere	dynamic sking from one ski to the other	1x 20 8 meter SL easy even rhythm	skis stay on the snow	activly absorbe and extend
	SL	Carving clean turns	no touching gates ski to wall	1 x 20 12 meter Panele SL	balanced top of turn	how deep are they going
	SL BRUSH	Balance atheltic stance	quick turns in rollers	2x20 2m picket fence brush in rollers		
	Rollers	Balance atheltic stance	free ski in the rollers	just the rollers no wickets	Rhythm and tempo maintained	are they in blance?
Lane 4						

- External feedback – hard to do but research shows its more effective
- Internal feedback

- Visual focus
- Feel focus

Is Feedback Always Essential?

- Feedback less important as skill level increases
- Learners develop ability to detect and correct own errors
- So, fade out over time, although precision may be increased

Frequency of Feedback

- More is not always better!

- High relative frequency better for performance, low relative frequency best for learning

- If frequency too high:
  - ✓ Attention / memory overload
  - ✓ Overdependence on extrinsic feedback
  - ✓ No opportunity for ‘trail + error’ learning

- Bracket out side the normal
  - Extreme bracketing for teaching skiing
  - Bracketing for adaptability in racing
    - – tempo and rhythm
- Increase random and variety with in a session
  - With CLEAR TASK
- Use the environment to your advantage

- Long term planning