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Understanding and Teaching Competitive Gymnastics Skills

The “Understand → Teach” model revisited

- Rick McCharles

Commonwealth Games Coaching Seminar 1994

A great coach is like a great chess player. A strategy is determined in advance. Goals and objectives are established. The game plan is set in motion.

Yet the plan is changeable. The great player adapts to obstacles that arise. And takes immediate advantage when opportunities appear.

Often a great player makes moves intuitively, relying on a wealth of past experience. Many hundreds of training and study hours make the response automatic. Often a master cannot explain exactly why a specific move is made.

An expert coach is like a chess master. Yet coaching is much greater, much more complex, an art and science. A coach works with living children in the real world, not with wooden pieces on a board.

The coach must care for the intellectual, emotional, psychological, social, moral and spiritual development, in addition to ensuring daily physical and technical progress. At times the coach spends more hours with the child each week than does the parent.

With this overwhelming responsibility, how does a coach decide **what move to make next?**

The Canadian Gymnastics Federation (CGF) recommends that coaches use the **“Understand → Teach” model**. This is a simplified representation of the process that every coach uses when teaching gymnastics skills.

UNDERSTAND



TEACH

1.1 IDENTIFY

- Whole skill
- Critical phase(s)

1.2 BIOMECHANICS

- Ideal model
- Analytical sequence
- Forces

1.3 BODY ACTIONS

2.1 CONDITIONING

- Injury prevention
- Key body positions
- Specific conditioning

2.2 PSYCHO-MOTOR PROGRESSIONS & SPOTTING

- Injury prevention
- Orientation
- Progressions
- Monitoring
- Spotting considerations

2.3 ERROR DETECTION, CAUSE & CORRECTION

- Key error(s)
- Key cause(s)
- Correction
- Perfecting

UNDERSTAND

1.1 IDENTIFY

- **Whole skill**

- ☞ Observe the whole skill several times
 - demonstrator
 - videotape (regular and slow motion)
 - photo-sequence
 - etc.
- ☞ Draw the skill in stick-figure sequences
- ☞ Write down qualities of the skill which are not shown
 - speed (e.g. “fast!”), rhythm, acceleration, etc.

- **Critical phase(s)**

- ☞ Break whole skill into major phases
- ☞ Which phase is the **most** important?

1.2 BIOMECHANICS

- **Ideal model(s)**

- ☞ For each phase, visualize an **ideal** “model of performance”

- **“Analytical sequence” of each critical phase**

- start with the **most** important phase first
- ☞ Determine the body's path of the center of gravity for whole skill
 - identify the path during the critical phase
- ☞ Is **STABILITY** an important factor in this phase?
 - if yes, what is the “base of support”?
 - how can we optimize stability?
- ☞ Is **LINEAR MOTION** important in this phase?
- ☞ Is **ANGULAR MOTION** important in this phase?

- if yes, list the axis (axes) of rotation:

Transverse axis?	(e.g. salto)
Longitudinal axis?	(e.g. twist)
Anterior / Posterior axis?	(e.g. cartwheel)

• Forces

☞ What forces are **most** important to “optimize” performance?
- direction?
- magnitude?
- duration?
- timing?
- sequencing?

☞ Make a “free body diagram”
- draw **action** force applied by the gymnast
- draw in the direct and/or indirect “ground **reaction** force”

1.3 BODY ACTIONS

☞ What are the **most important body actions** for each critical phase?

- body alignment (tightness)*
- trunk flexion / extension*
- elbow flexion / extension*
- shoulder flexion / extension*
- shoulder elevation / depression*
- hip flexion / extension*
- leg flexion / extension*
- other*

- list in priority order of importance
- refer back to this list during conditioning section

TEACH

2.1 CONDITIONING

• Injury prevention

- ☞ What potential injuries **could** result from training this skill?
 - slow onset overuse?
 - traumatic?
- ☞ What **preventive** specific conditioning do you prescribe?

• Key body positions

- ☞ Specifically train the **most** important (isometric) body positions
 - train in the same position relative to gravity
 - excellent form and technique
 - prescribe resistance, sets, reps, frequency, rest intervals, etc.
 - train body tightness (“gymnast must be taut to be taught”)

• Specific conditioning

- ☞ Select or invent exercises which approximate the skill
 - flexibility, strength, power, endurance
 - speed, range of motion, body position, etc.
 - muscular action (eccentric, concentric, etc.)
 - load, sets, reps., frequency, rest intervals, etc.
- ☞ Do you have specific, measurable improvement **objectives**?
 - what are they?
 - how will you monitor conditioning?

2.2 PSYCHO-MOTOR PROGRESSIONS & SPOTTING

• Injury prevention

- ☞ What potential injuries **might** result from training this skill?
 - slow onset overuse?
 - traumatic?

- ☞ What **safer** specific progressions can you use?
 - specialized equipment?
 - “privileged learning situations”?
 - ~ e.g. beam mat, soft vaulting horse

• Orientation

- ☞ Orient the gymnast to the **goal skill** in some of the following ways:
 - spot gymnast through the goal skill
 - have gymnast observe the skill
 - show gymnast video of the skill
 - show gymnast a photo-sequence
 - post a sequence drawing on the gym wall
 - etc.

• Progressions

- ☞ What “quality” of this skill is highest priority?
 - what psychological skills are needed?
- ☞ Develop a sequential list of drills
 - each drill should target **just one** quality of the skill
- ☞ Select or invent exercises that technically approximate the skill
 - speed, range of motion, body position, etc.
 - muscular action (eccentric, concentric, etc.)
 - load, sets, reps., frequency, rest intervals, etc.
- ☞ What standards of performance / consistency are required to advance?

• Monitoring

- ☞ How will you track technical progress?
 - baseline data?
 - wall charts, database, training log, etc.?
- ☞ Do you have specific, measurable **objectives**?
- ☞ Will improvement in **progressions** result in success with goal skill?
- ☞ How will you monitor **goal skill** improvement?

• Spotting considerations

- ☞ Can you use drills or specialized equipment instead of spotting?

- ☞ Can you spot all progressions safely?
- if not, bring in a spotting assistant

2.3 ERROR DETECTION, CAUSE AND CORRECTION

- **Key error(s)**

- ☞ Refer back to your ideal “model of performance”
- ☞ How does this performance differ from your model?
- ☞ What is the **major** error?

- **Key cause(s)**

- ☞ **Primary cause(s)** of the error?

- **Correction**

- ☞ What additional drills do you prescribe to correct the **cause** of error?
- conditioning drills or psycho-motor progressions?

- **Perfecting**

- ☞ Once learned, what can be done to **FURTHER IMPROVE** the skill?
 - increase amplitude
 - stylize
 - improve consistency
 - safety
 - etc.

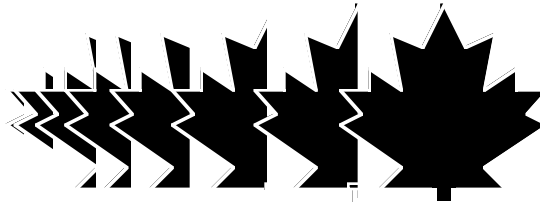
- ☞ What will you do for long term **maintenance** of this skill?

Coaching is the development of human potential. Our challenge is to safely optimize that progress. And to offer an environment which allows athletes to enjoy the most enriched, fulfilled lives they can.

“Understand > Teach” Revisited

Rick McCharles

When deciding what drill to choose next, the Canadian Gymnastics Federation recommends you use the “Understand → Teach” model, or to modify it as suits your needs. Good luck and good training!



Postscript

A group of top coaches recently used this model in drawing up an ideal methodology for teaching the double back layout from bars.

These highly educated coaches appreciated the methodical, linear approach presented in the model, but reported that this is not how they actually approach teaching skills in the gym. This kind of complexity, many felt, was “analysis to paralysis.”

Expert coaches, with experience, can jump quickly to the most important steps, often using a set of coaching axioms and training principles. The solutions to coaching problems become almost automatic — just like the intuitive moves of a chess master.

Recommended reading

Canadian Gymnastics Federation National Coaching Certification Program (NCCP) Level 2 Coaching Manuals, 1989, Ed. Cathy Haines.

Canadian Gymnastics Federation National Coaching Certification Program (NCCP) Level 3 Coaching Manuals, 1986, Ed. Tom Kinsman.

Published by the Canadian Gymnastics Federation, Suite 510, 1600 James Naismith Drive, Gloucester, Ontario, Canada. K1B-5N4. Ph. (613) 748-5637, Fax (613) 748-5691