

Summer School

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# Designing sports practice in a Department of Methodology

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What exactly is *acquired*  
during skill acquisition?

# Skill Adaptation to interacting constraints

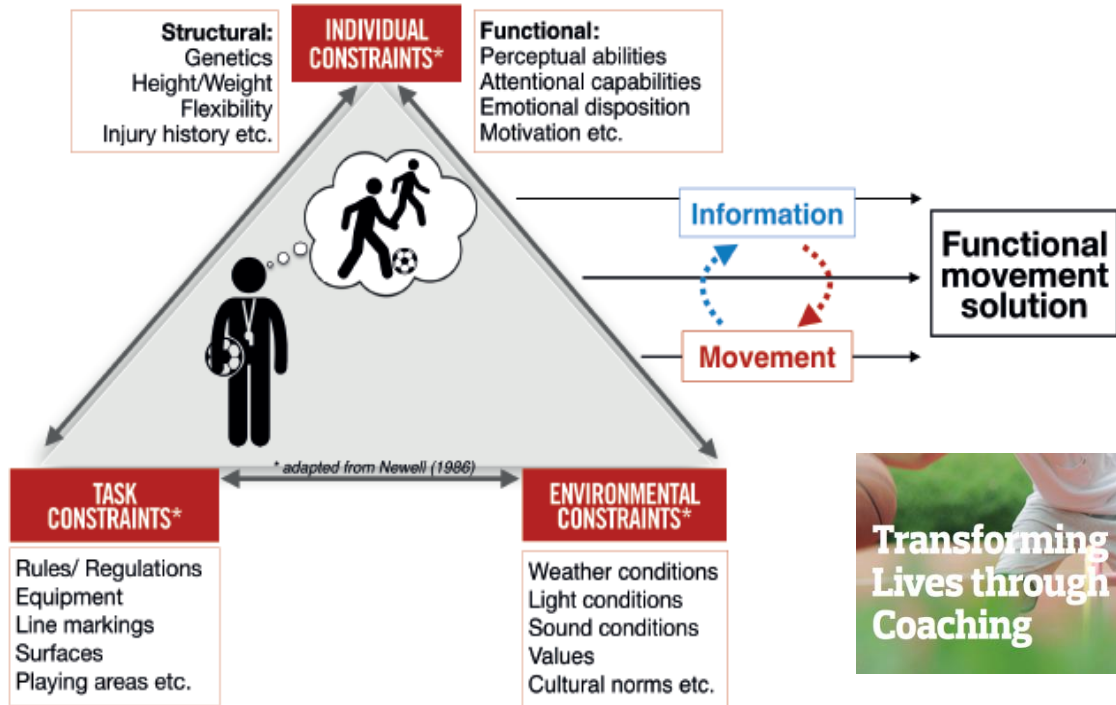


Figure 2: Three interacting constraint categories and examples to drive the coupling of Information and movement (Source: adapted from Davids et al, 2008).

Affordances  
of the  
environment

Skill Adaptation: Finding information to regulate actions.....

Practice design in sport: Discover and explore affordances of the environment (invitations to act).....

Information-movement coupling  
One-legged balance and postural  
regulation

Example of affordances available for  
catching a ball

# Learning to use affordances: An Ecological model of sports practice (Chow et al., 2020)

Figure 1: A Continuum of Practice Designs with different affordances on offer for learners. At one end, learners are typically directed to fewer affordances in specified areas of the learning landscape by instructors (symbolized by the uniform shapes, few in number). In contrast, a more diverse and extensive range of affordances on offer at the less structured end of the landscape for practice designs ((symbolized by the rich and varied shapes and sizes available).



In Nonlinear Pedagogy,  
practice is a 'search' by  
athletes....for performance  
solutions.

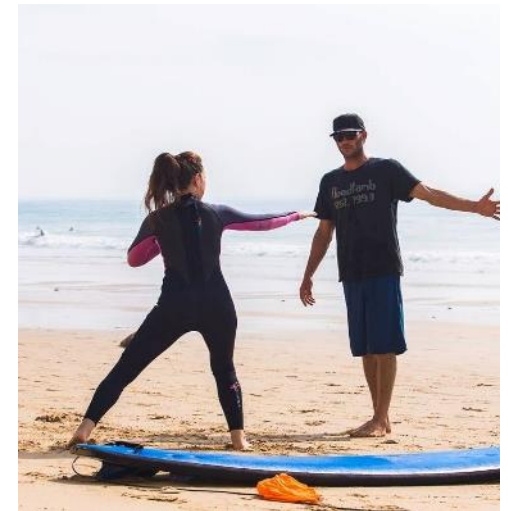
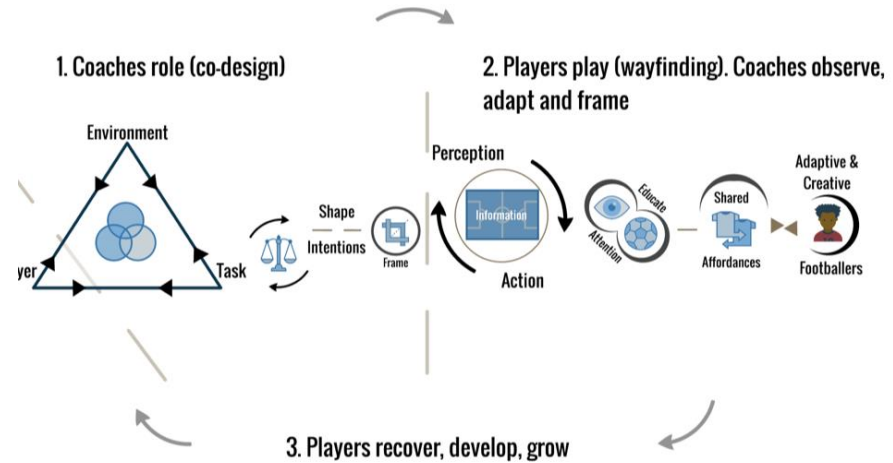
How can we design practice  
tasks in a Department of  
Methodology?

"Practice is a particular type of repetition without  
repetition".... practice should not be "merely  
mechanical repetition by rote" which has been  
discredited (Nikolai Bernstein, 1967, p134).



In Practice:  
Context is  
Everything!

Practitioners in a  
Department of  
Methodology  
collaborate to  
enrich action,  
perception and  
cognition in  
athletes







Manipulating interacting constraints in practice helps learners to:

- problem-solve
- make decisions
- think-perceive-act
- self-regulate actions



# How do constraints interact to guide skill acquisition and performance?

Break down into groups and prepare some practical examples of interacting constraints in different sports.

Present your practical ideas to the group.



# Practical Example I: Different designs in Football Goalkeeping practice

How athletes can be encouraged to use Cognition, Perception  
and Action in practice



## Repetitive Technique Training in professional Football Goalkeepers





Fabian Otte: Goal-Keeper coach  
Borussia Munchen Gladbach, Bundesliga

Repetition without Repetition (Bernstein, 1967)





## Practical Example II: Sian Barris (QUT/AIS/Diving Australia)

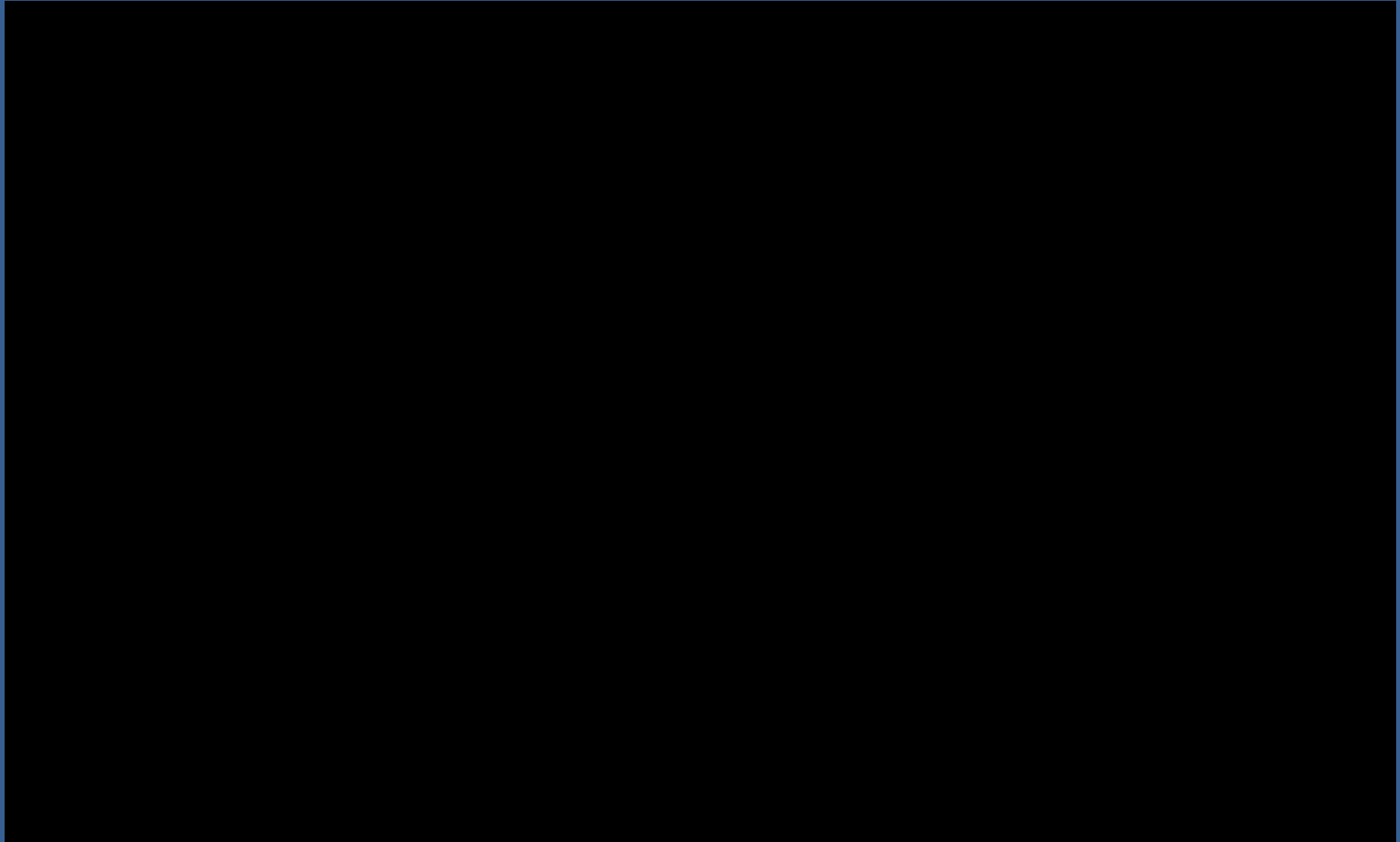


Perfect Practice?

The problem of Baulking in Diving

Sian Barris, South Australia Sports Institute

# The Problem of Baulking in practice of elite Springboard Divers





Divers cannot baulk in competition without losing 2 points.

They need to adapt their aerial movements and water entry to variability in their take off movements.

Water splash must be minimized on pool entry

So what happens in competition when penalties for baulking apply....?

Sian Barris South Australian  
Sports Institute:

Skill Adaptation in  
Springboard Divers to avoid  
baulking

During practice they  
simplified their dives instead  
of baulking

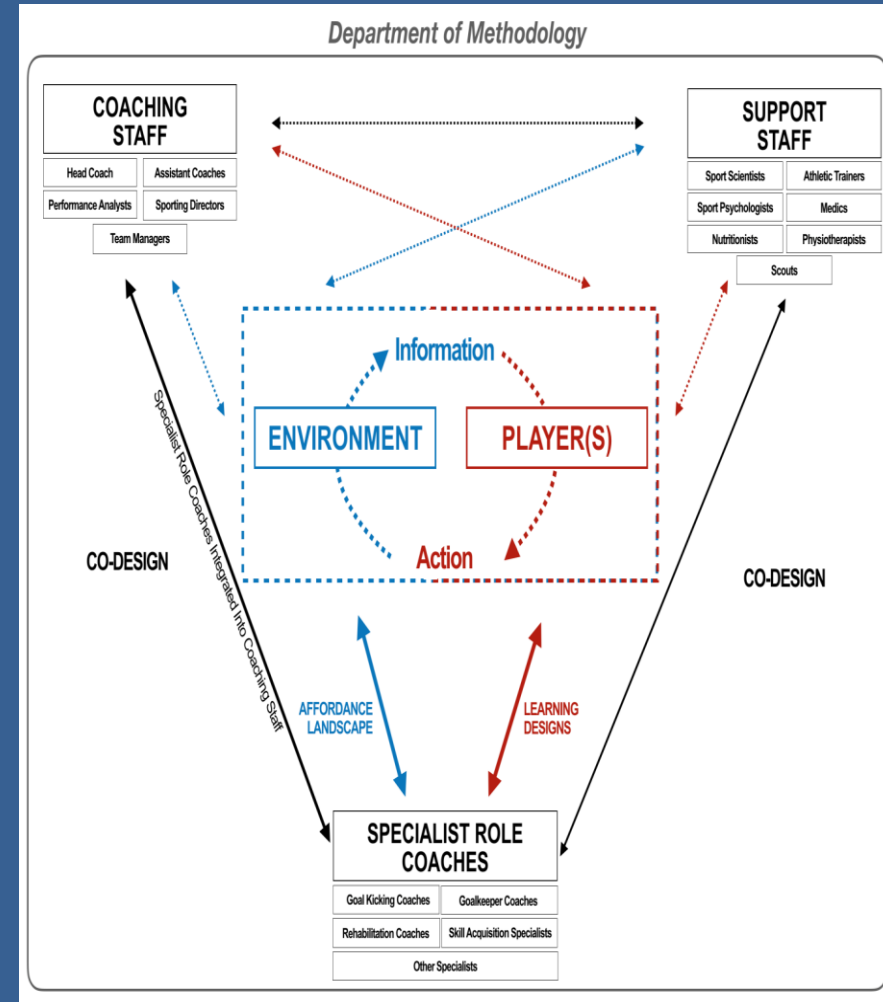
During more complex dives  
they tried to adapt their  
movements and sometimes  
failed.....

But with practice they learned  
not to baulk in training and  
became more skilled at  
adaptation



# Department of Methodology using Constraints-based coaching:

Rothwell et al. (2020) and Otte et al. (2020)

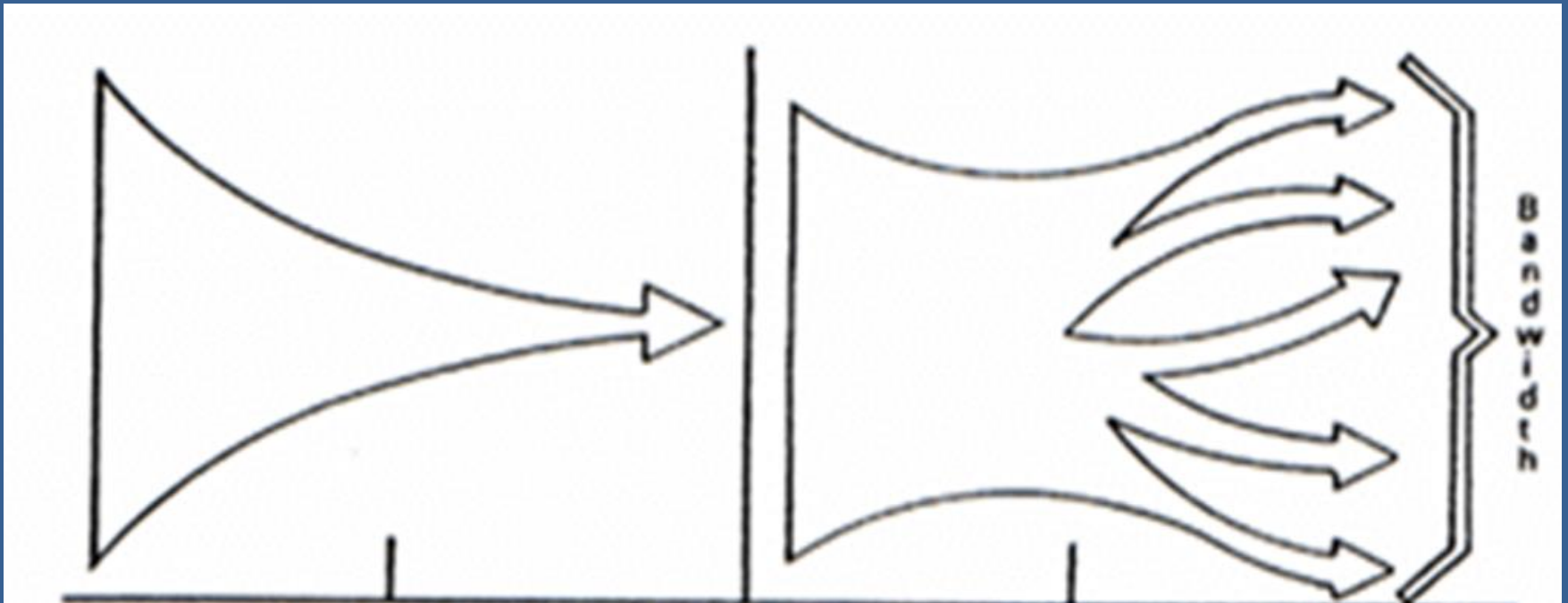


From UEFA Direct: The Technician (2020).  
 Understanding the team behind the team, p42. UEFA  
 publication: Nyon, Switzerland. UEFA.COM

# Ecological Dynamics:

## How can a Department of Methodology support learning?

“All tasks have intended outcomes of an action.....”In the majority of tasks the way in which the performer may satisfy the outcome of the act is not specified.....most tasks do not specify the pattern of coordination to be utilised by the performer. In some ontogenetic skills....task constraints specify or limit the kinematic or dynamic nature of the response that a performer is able to produce.”  
(Karl Newell, 1986, p.352):



Adapted from J. R. Higgins & R.K. Spaeth (1972) Relationship Between Consistency of Movement and Environmental Condition, *Quest*, 17:1, 61-69. DOI:[10.1080/00336297.1972.10519724](https://doi.org/10.1080/00336297.1972.10519724)