

CHOKING IN SPORT

CONSCIOUS PROCESSING HYPOTHESIS

Advanced Sport and Exercise Psychology

Week 9

OBJECTIVES OF LECTURE

- ▶ Skill breakdown
 - ▶ Introduce the CPH
 - ▶ research in the area
 - ▶ Implicit and explicit knowledge
 - ▶ “Reinvestment”
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- Several white lines of varying lengths and slopes are positioned in the bottom right corner of the slide, creating a modern, abstract graphic element.

Dustin Johnson – 2.47 to 5.10

<https://www.youtube.com/watch?v=VgySeuuLKT4>

Basketball free-throws – 0.20-1.32

<https://www.youtube.com/watch?v=rJvLwSf0Xi8>

Raphael Jacquelin

https://www.youtube.com/watch?v=2zlvmv0xl_A

CHOKING IN SPORT

- ▶ explaining the 'choking phenomena'
 - ▶ Information logjams
 - ▶ Thinking too much because of worry (losing a lead or fear of failure in general)
- ▶ Attentional hypotheses – 2 main types:
 - ▶ Distraction (Wine, 1971)
 - ▶ Self-focus (Baumeister, 1984)
- ▶ Self focus models consider:
 - ▶ the process of performance
 - ▶ disruption to automatic processing (Mullen & Hardy, 2000)

SKILL BREAKDOWNS UNDER 'STRESS'

MASTERS (1992) - APPLIED TO SPORT

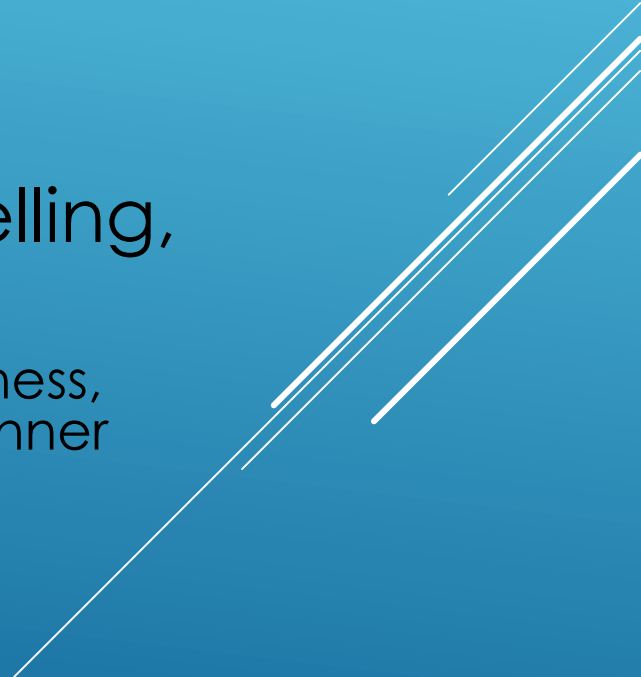
- States that an increase in state anxiety, combined with explicit knowledge (about the task being performed) can induce conscious control and = performance disruption



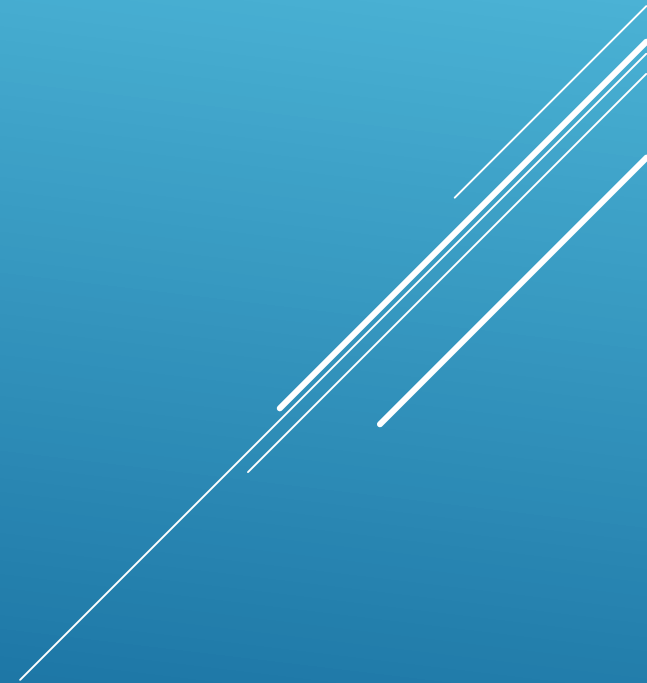
TASK

- ▶ Consider the following tasks – rules?
 - ▶ driving & then parallel parking a car between two others
 - ▶ tying a shoelace
 - ▶ a sport skill
 - ▶ basketball free-throw
 - ▶ A tennis serve
 - ▶ receiving and immediately passing the ball in netball or basketball
- ▶ When skills are automatic, its hard to access the 'rules' associated with executing the skill

IMPLICIT AND EXPLICIT KNOWLEDGE

- ▶ Explicit knowledge – rule-based, procedural information on 'how' to do the task
 - ▶ execution is slow, cognitively effortful; often have to think about the task in a step-by-step manner
 - ▶ Implicit knowledge – exists in the unconscious, developed through modelling, imagery, analogies
 - ▶ task performance occurs without conscious awareness, movements are executed in a more automatic manner
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- Several white lines of varying lengths and angles are positioned in the bottom right corner of the slide, creating a modern, abstract design element.

- So, how are these knowledge 'types' relevant for explaining skill breakdown?
- ...we have to start with how skills have traditionally developed
(according to 'cognitive' explanations for skill learning)



- ▶ stages of learning (Fitts & Posner, 1967):
 - ▶ movement from the cognitive phase through an associative phase to an autonomous phase
- ▶ Cognitive phase – knowledge is explicit, rule based and performance is slow and effortful
- ▶ Associative – match cues to movements; refining skills and increasing fluidity
- ▶ Autonomous phase – knowledge is implicit, non-verbalised, and performance is smooth, effortless and fast
- ▶ De-automatisation (Deikman, 1969)
 - ▶ performance breaks down and reverts back to movements produced in an earlier stage of learning
 - ▶ by reinvesting 'attention' into actions

COGNITIVE EXPLANATION FOR CPH

- ▶ Why does performance break down in sport?
 - ▶ Reverse from automatic movement to movement associated with an earlier stage of learning (cognitive phase)
 - ▶ reinvest in the knowledge base (explicit knowledge) used by novices in the cognitive phase of learning
- ▶ regression back to basic movements,
- ▶ shift from implicit knowledge use to explicit knowledge use (when the movement should be performed automatically)

MASTERS (1992)

- ▶ Breakdown = reinvestment in controlled processing
- ▶ If less explicit knowledge is used / known then performance is less likely to breakdown
- ▶ chunking and de-chunking (Neves & Anderson, 1981)

PREVENTING REINVESTMENT ?

LEARNING AND EXECUTING SKILLS IMPLICITLY

- ❑ Skills learnt implicitly are more resilient under psychological pressure.
(Masters, 1992 and Hardy et al., 1996)
- ❑ Why?
- ❑ Practical implications of implicit learning
 - ▶ Longer lasting skills versus speed of acquisition
 - ▶ Coaching by analogy/metaphors
 - ▶ Symbolic representation of skill
 - ▶ Difficult way to teach when 'knowledge' is limited.
- ▶ However, it is much easier to breakdown the skill and provide a set of rules that 'control' variation.

- ▶ Experiment was devised as a means of testing the hypothesis that disruption of the automaticity of a skill under pressure will be less likely if the skill has been learned **implicitly** rather than explicitly

- ▶ Two phases:

- ▶ Golf putting skill either explicitly (with knowledge of rules) or implicitly using a dual task method
 - ▶ Under conditions of stress, presence of a “golf pro” and financial incentive

- ▶ Support was found for the hypothesis
 - ▶ EL group reduced performance under stress
 - ▶ IL continued to improve

MASTERS (1992)

- ▶ 32 novice golfers assigned to one of **four** groups:
 - ▶ Implicit Learning (no instruction)
 - ▶ ILAST (no instruction + attention suppression task)
 - ▶ EL (Explicit learning)
 - ▶ Control
- ▶ no stress learning conditions + stress test
- ▶ Results: EL suffered performance decrements under stress but both implicit groups continued to improve.

HARDY, MULLEN AND JONES (1996)

MULLEN & HARDY (2000)

- ▶ Used 18 'skilled' golfers – “performance paradigm”
- ▶ 3 experimental conditions (RM counterbalanced-design):
 - ▶ Task relevant (EL) condition (coaching points verbalised)
 - ▶ Task irrelevant condition (Random Letter Generation)
 - ▶ Control condition
- ▶ Tested on 2 separate days
 - ▶ neutral instruction set
 - ▶ evaluative instructional set (which induces anxiety)
- ▶ Results
 - ▶ Task relevant condition under evaluation
 - ▶ better golfers performed worse

- ▶ Research suggests that the use of explicit knowledge under stress causes performance breakdown
 - ▶ Learners
- ▶ more skilled performers are not immune to this effect through 'reinvestment' in EL

RESEARCH SUMMARY

PRACTICAL IMPLICATIONS

- ▶ From a coaching perspective better to provide instructions that are implicitly based to avoid reinvestment
- ▶ Avoid breaking new skills down into many parts – only encourages reinvestment
 - ▶ “Holistic” approach
 - ▶ Cues or triggers that represent the complete movement (Mullen et al., 2015)

- ▶ Liao, C., & Masters, R.S.W (2001). Analogy learning: A means to implicit motor learning. *Journal of Sports Sciences*, 19, 307-319.
- ▶ Liao, C., & Masters, R.S.W (2002). Self-focused attention and performance failure under psychological stress. *Journal of Sport and Exercise Psychology*, 24, 289 – 305.
- ▶ Law, J., Masters, R., Bray, S.R., Eves, F., & Bardswell, I. (2003). Motor performance as a function of audience affability and metaknowledge. *Journal of Sport and Exercise Psychology*, 25 (4).
- ▶ Masters, R.S.W. (1992). Knowledge, knerves and know-how: The role of explicit versus implicit knowledge in the breakdown of a complex motor skill under pressure. *British Journal of Psychology*, 83, 343-358.
- ▶ Masters, R.S.W., Polman, R.C.J., & Hammond, N.V. (1993). Reinvestment: A dimension of personality implicated in skill breakdown under pressure. *Personality and Individual Differences*, 14 (5), 655 – 666.
- ▶ Masters, R.S.W., & Maxwell, J.P. Ch 10. Implicit motor learning: reinvestment and movement disruption. What you don't know won't hurt you.
- ▶ Mullen, R., & Hardy, L. (2000). State anxiety and motor performance: testing the conscious processing hypothesis. *Journal of Sport Science*, 18, 785-799
- ▶ Mullen, R., Faull, A., Jones, E.S., & Kingston, K. (2015). Evidence for the effectiveness of holistic process goals for learning and performance under pressure. *Psychology of Sport and Exercise*, 17, 40-44.