



# Maximizing Multi-Disciplinary Team Impact in High-Performance Sport: Exploring Problem Solving, Decision-Making, Expertise, & Team Performance.

## Part 5: High Performance Teaming

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Multi-Disciplinary Team; Shared Expertise; Trust; Learning Disposition; Cognitively Diverse Team; Collective Cognitive Repertoire; Inter-Disciplinary Collaboration; Team Heuristics; Shared Mental Models

### Overview

The concept of multi-disciplinary high performance teams has become increasingly prevalent in elite high-performance sport.

However, the effectiveness of such teams depends on various factors such as the team's shared expertise and consciousness, the presence of a clear purpose, mutual respect and trust between members, and a learning disposition. Additionally, it is essential to distinguish between high-performance teams and working groups or pseudo-teams, which lack the essential characteristics of a high-performance team. Cognitively diverse teams that leverage the collective cognitive repertoire of diverse teams can deliver better outcomes in complex scenarios. However, it is necessary to understand the risks and challenges of inter-disciplinary collaboration and the susceptibility of team heuristics and shared mental models to systematic thinking errors, blind spots, and inaccuracies. To enhance team performance, it is crucial to focus on "teaming," which emphasizes how teams approach their work

collectively and why, rather than the status of a high-performance team. This paper will explore these themes and investigate how they apply to elite high-performance sport.

### Teams

Do teams have shared expertise or consciousness alongside their collective intelligence (Foire et al 2008)? We often look at teams as having a clear purpose, shared goals, shared vocabulary, shared repertoire, time bound deliverables and mutual respect and trust between members. These might be utopic characteristics that support effective team working however, does this terminology support the creation and effective performance of expert teams that are looking for solutions to novel and complex problems that have been identified? There are many pitfalls that can get in the way of the performance of teams. Power dynamics and gradients, team fissures, conflict, relationship issues, group think, deference to perceived authority, silence and fear of speaking up, ambiguity of purpose, lack of clarity and



goals to name but a few issues (De Dreu & Weingart 2003; Garvin & Roberto 2001; Roberto 2004). As soon as we create a team, there is an inherent risk of social disharmony, perceived hierarchy, ambiguous and toxic climates derailing effective team working (Cruickshanks & Collins 2013).

### **Working Groups or Teams:**

Alongside this, we also must recognise that high performance team working isn't always necessary and is sometimes given the term without fitting the definition. Working groups and pseudo teams are examples of when groups of individuals are assembled to achieve an outcome without the benefit of time or having the key characteristics defining high performance team (West & Lyubovnikova 2012). For a team to be considered 'high performance', it must have shared and challenging goals, mutual accountability and inter-team member respect through a learning disposition all being central to its performance (Edmondsum 2012). Again, defining what the team is and highlighting some of its characteristics might not help us to describe how we leverage everyone's information, knowledge, tools, perspectives and mental models and certainly doesn't help us to leverage one's individual repertoire as part of a cognitively diverse team (Hong & Page 1998; 2004). It may also be worth asking whether teams work together for long enough to begin to establish shared and blended consciousness, repertoire and skills. In elite sport are individuals expected to work across multiple 'working

groups' on different projects rather than as part of a high-performance team?

### **Cognitively diverse teams**

We recognise the importance of diversity in problem solving and have argued that leveraging the collective cognitive repertoire of diverse teams (i.e. information, knowledge, tools, perspectives and mental models) can deliver better outcomes in complex VUCA scenarios. In elite sporting contexts where MDT work together to support coach and athletes, can we map the individual and collective perspectives, tools-heuristics and mental models? Is it possible to peer into the cognitive repertoire of the group and in doing so, would we see an evolved set of knowledge and tools that are in fact, interdisciplinary in nature and what risks and challenges might this throw up? Would we find that team heuristics and shared mental models are also susceptible to systematic thinking errors, blind spots and inaccuracies by assumption? In better understanding collective cognitive problem solving, could we support practitioners transitioning into teams to see beyond their tools and see how they work with them in tandem with others? Could we develop a new vocabulary and way of thinking that supports the implicated nested skills that are taught in higher education in a more purposeful way, and could we build process and approaches that move beyond confirming the characteristics of team work to something quite different? Can we articulate what cognitively diverse team works look like when set to



work in complex dynamic performance sport contexts and significantly enhance this?

### Team Vs Teaming

One final thought is given to the term high performance team. This, for the practitioner aspiring to work in elite high-performance sport might seem like they have made it and once there, keep their head down and hold on to the status could well be the goal. Teaming, a concept socialised by Amy Edmondson (2012) gives a different emphasis to how we might perceive High Performance Teams. Edmondson suggests we should move away from the title and/or status focusing more on ways of working and the levels of performance that might be attained or achieved over time. The concept of teaming emphasises 'doing' rather than 'being' enabling the team to focus on how they approach their work collectively and why. In elite sport, do we set up structures to breed teaming, which lends itself to creating the conditions for optimal performance or do we use the term high performance teams, in reference to a status in a hierarchy. In essence, when we consider elite sport we tend to think of high performance teams with high performance MDTs and yet, the titles don't necessarily help us to gauge or define the type of work that the team does together or whether it is effective.

### Final thought

In elite high performance sporting contexts today, there is an enormous amount of pressure on athletes, coaches and the support team that work

with them. The financial rewards, celebrity status, commercial incentives, performance bonuses and association with winning can be highly lucrative. In most cases the goals of the organisations are to win, and this outcome goal is clear but often very unrealistic. There is an ongoing and ever-changing narrative about how teams and athletes do win. The processes that underpin performance, aligns with the coaching philosophy and is individualised (or not) to the athlete seems to be both a 'black box' and a 'messy picture' which when verbalised, doesn't make logical sense. Many practitioners working in sport aligns with the language of complexity, performance problem solving, creativity and innovation. Does this narrative need more scrutiny, and does it fit with the needs of the coaches and athletes the MDTs work with?

### Summary

In summary, the paper provides insights into the challenges and benefits of multi-disciplinary high-performance teams in elite sport and encourages a focus on how teams approach their work collectively and why. It highlights the importance of cognitively diverse teams and the need to understand the risks and challenges of inter-disciplinary collaboration. Ultimately, the paper encourages a shift in focus from the status of a high-performance team to the process of teaming, which can create the conditions for optimal performance in elite sport.

We have explored the effectiveness of multidisciplinary high-performance teams in elite



sports. It highlights the importance of shared expertise and consciousness, a clear purpose, mutual respect and trust, and a learning disposition for effective team working. However, challenges such as power dynamics, conflict, group think, and lack of clarity can hinder team performance. Additionally, working groups and pseudo-teams lack the essential characteristics of high-performance teams. Cognitively diverse teams leveraging collective cognitive repertoire can deliver better outcomes in complex scenarios but may be susceptible to systematic thinking errors and blind spots. To enhance team performance, the concept of "teaming" emphasizes how teams approach their work collectively and why, rather than the status of high-performance teams.

### About Blended Intelligence

Blended Intelligence is not just a consultancy service, it's a game-changer for high-performance sports organizations. By leveraging the power of diverse teams and innovative technology, Blended Intelligence enables collaborative problem-solving and delivers tailored solutions to complex performance challenges. With a focus on shared intelligence and a commitment to maximizing competitive advantage, Blended Intelligence is helping teams think differently and achieve brilliant outcomes.

### References

Baumeister, R. F., (2002) *Ego Depletion and Self-Control Failure: An Energy Model of the Self's Executive Function*, *Self and Identity*, Vol 1 (2) 129-136

Bennis, W. M., & Pachur, T., (2006) *Fast and Frugal Heuristics in Sport*, *Journal of Psychology in Sport and Exercise*, Vol. 7, pp. 611-629

Blumenthal-Barby, J.S., & Krieger, H. (2014). *Cognitive Biases and Heuristics in Medical Decision Making: A Critical Review Using a Systematic Search Strategy*. *Medical decision making*. Vol. 35, pp. 1-19.

Cassidy, T. and Rossi, T., 2006. *Situating learning:(Re) examining the notion of apprenticeship in coach education*. *International Journal of Sports Science & Coaching*, 1(3), pp.235-246.

Chasanidou, Dimitra & Gasparini, Andrea & Lee, Eunji. (2015). *Design Thinking Methods and Tools for Innovation*. 10.1007/978-3-319-20886-2\_2.

Childs, S. and McLeod, J. (2013). *Tackling the wicked problem of ERM: using the Cynefin framework as a lens*. *Records Management Journal*, Vol 23 (3), pp. 191 – 227.

Collins, D., Burke, V., Martindale, A., & Cruickshanks, A., (2015). *The Illusion of Competency Versus the Desirability of Expertise: Seeking a Common Standard for Support Professions in Sport*, *Sports Med*, Vol. 45, pp. 1-7.

Crosskerry, P., (2003). *The importance of cognitive errors in diagnosis and strategies to minimise them*, *Academic Medicine*, Vol. 78 (8), pp775-780.

Cruickshank, A. and Collins, D., (2013). *Culture change in elite sport performance teams: Outlining an important and unique construct*. *Sport & Exercise Psychology Review*, 9(2), pp.6-21.

De Dreu, C.K. and Weingart, L.R., (2003). *Task versus relationship conflict, team performance, and team member satisfaction: a meta-analysis*. *Journal of applied Psychology*, Vol. 88 (4), p.741.

De Martino, B., Kumaran, D., Seymour, B. and Dolan, R.J., (2006). *Frames, biases, and rational decision-making in the human brain*. *Science*, Vol 313 (5787), pp.684-687.

Edmondson, A. C., (2012). *Teaming: How Organizations Learn, Innovate, and Compete in the Knowledge Economy*. Jossey-Bass.

Epley, N., & Gilovich, T., (2006). *The anchoring-and-adjustment heuristic: Why the adjustments are insufficient*, *Psychological Science*, Vol. 17 (4), pp. 311-318.

Fiore, S.M., Hoffman, R.R. and Salas, E., (2008). *Learning and performance across disciplines: An epilogue for moving multidisciplinary research toward an interdisciplinary science of expertise*. *Military Psychology*, Vol. 20(sup1), pp.S155-S170.



- Fiore, S.M., Rosen, M., Salas, E., Burke, S. and Jentsch, F., (2017). *Processes in complex team problem-solving: parsing and defining the theoretical problem space*. In *Macro cognition in teams* (pp. 143-163). CRC Press.
- Furley, P., Bertrams, A., Englert, C., & Delphia, A. (2013). *Ego depletion, attentional control, and decision making in sport*, *Psychology in Sport and Exercise*, Vol 14, pp900-904
- Garvin, D. A., & Roberto, M. A., (2001). *What you don't know about making decisions*, *Harvard Business Review*, Vol 3, pp. 22-32
- Gigerenzer, G., (1991). *How to make cognitive illusions disappear: Beyond 'Heuristics and Biases'*. *European Review of Social Psychology*, Vol. 2, pp. 83-115.
- Gigerenzer, G., (2008). *Why Heuristics Work, Perspectives on Psychological Science*, Vol. 3 (1), pp. 20-29.
- Gigerenzer, G., & Gaissmaier, W., (2011). *Heuristic Decision Making*, *Annual review of Psychology*, Vol. 62, pp. 451-482.
- Goldstein, D. G., & Gigerenzer, G., (2009). *Fast and Frugal Forecasting*, *International Journal of Forecasting*, Vol. 25, pp. 760-772.
- Hall, P., & Weaver, L. (2001). *Interdisciplinary education and teamwork: a long and winding road*, *Medical Education*, Vol 35, pp. 867-875.
- Horwitz, S., & Horwitz, I. (2007). *The effects of team diversity on team outcomes: A meta-analytic review of team demography*. *Journal of Management*, Vol 33, 987-1015.
- Hong, L. & Page, S.E., (1998). *Diversity and optimality*. Santa Fe Institute. April
- Hong, L. & Page, S.E., (2004). *Groups of Diverse Problem Solvers Can Outperform Groups of High-Ability Problem Solvers*, *PNAS*, Vol. 101 (46), pp. 16385-16389
- Hotaling, J. M., Fakharl, P., & Busemeyer, J. R., (2015). *Dynamic Decision Making*, *International Encyclopaedia of the Social & Behavioural Sciences*, Vol 2, pp 709-714.
- Jackson, S.E., May, K.E., Whitney, K., Guzzo, R.A. & Salas, E., (1995). *Understanding the dynamics of diversity in decision-making teams*. *Team effectiveness and decision making in organizations*, Vol. 204, p.261.
- Johansen, B., & Euchner, J., (2013) *Navigating the VUCA World*, *Research-Technology Management*, Vol. 56 (1), pp. 10-15
- Kahneman, D., (2011). *Thinking, Fast and Slow*, New York: Farrar, Straus and Giroux.
- Kahneman D, Klein G. (2009). *Conditions for intuitive expertise: a failure to disagree*. *Am Psychol*. Vol.64(6), pp. 515–26.
- Kahneman, D., & Tversky, A. (1984). *Choices, Values, and Frames*, *American Psychologist*, Vol. 39 (4), pp 341-350.
- Kerr, N. L., & Tinsdale, S. R., (2004). *Group Performance and Decision Making*, *Annual review Psychology*, Vol. 55, pp. 623-655.
- Kitchener, K. S., (1983). *Cognition, Metacognition, and Epistemic Cognition*, *Journal of Human Development*, Vol. 26, pp. 222-232.
- Klein, G.A., 1993. *A recognition-primed decision (RPD) model of rapid decision making*. *Decision making in action: Models and methods*, 5(4), pp.138-147.
- Klein, G. A., & Klein, G. A. (2004). *The power of intuition: how to use your gut feelings to make better decisions at work*. Currency
- Lanceley, A., Savage, J., Menon, U. and Jacobs, I., (2008). *Influences on multidisciplinary team decision-making*. *International Journal of Gynecologic Cancer*, Vol. 18(2).
- Larrick, R. P., & Feiler, D. C., (2015) *Expertise in Decision Making*, in Keren, G., & Wu, G., (eds) *The Wiley Blackwell Handbook of Judgment and Decision Making*, First Edition, pp. 696-721, John Wiley & Sons, Ltd.
- Leppnick, J., & Van Den Heuvel, A., (2015). *The evolution of cognitive load theory and its application to medical education*, *Perspect Med Educ*, Vol 4(3), pp 119-127.
- Lipshitz, R., Klein, G., Oransana, J., & Salas, E., (2001) 'Focus article: Taking stock of naturalistic decision making', *Journal of Behavioural Decision Making*, Vol 14, pp. 331-352.
- Loewenstein, G., Rick, S. and Cohen, J.D., (2008). *Neuroeconomics*. *Annu. Rev. Psychol.*, 59, pp.647-672.
- Lyle, J., (2010). *Coaches' decision making: A naturalistic decision making analysis*. In: *Sports coaching: Professionalisation and practice*. Churchill Livingstone Elsevier pp.27-41
- Lyle, JWB and Muir, B (2020) *Coaches' decision making*. In: *The Routledge International Encyclopedia of Sport and Exercise Psychology*. Routledge, London.
- McCloy, R. A., Beaman, C. P., Frosch, C. A. and Goddard, K. (2010) *Fast and frugal framing effects? Journal of Experimental Psychology: Learning, Memory & Cognition*, 36 (4). pp. 1043-1052.



Mello, A., & Rentsch, J. R. (2015). *Cognitive Diversity in Teams: A Multi-Disciplinary Review*. Small Group research, Vol 46 (6), pp623-658.

Mesmer-Magnus, J.R. and DeChurch, L.A., (2009). *Information sharing and team performance: a meta-analysis*. Journal of applied psychology, Vol. 94 (2), p.535.

Miller, T., Miller, T., McCann, A., Stacey, M. and Groom, P., (2020). *Cognitive psychology, the multidisciplinary operating theatre team, and managing a cannot intubate, cannot oxygenate emergency*. British Journal of Anaesthesia, 125(1), pp.e12-e15.

Milkman, K.L., Chugh, D., & Bazerman, M. H., (2009). *How can decision making be improved? Perspectives on Psychological Science*, Vol. 4 (4), pp. 379-383.

Mitchell, R., Nicolas, S., Boyle, B., (2009). *The role of openness to cognitive diversity and group processes in knowledge creation*, Small Group Research, Vol 40 (5), pp 534-554.

Mitchell, R., Boyle, B., O'Brien, R., Malik, A., Tian, K., Parker, V., Giles, M., Joyce, P., Chiang, V., (2016). *Balancing cognitive diversity and mutual understanding in multidisciplinary teams*, Health Care Management Review. 2016; Aug 27

Nash, C. and Collins, D., (2006). *Tacit knowledge in expert coaching: Science or art?*. Quest, Vol. 58(4), pp.465-477.

Nokes, T.J., Schunn, C.D. & Chi, M. (2010), *Problem solving and human expertise*. in International Encyclopedia of Education. Elsevier Ltd., pp. 265-272

Oliveira, R. F., Lobinger, B. H., & Raab, M., (2014). *An adaptive toolbox approach to the route to expertise in sport*, Frontiers in Psychology, Vol. 5 (709), pp. 1-4.

Page, S. E., (2007). *Making the difference: Applying a Logic of Diversity*, Academy of management Perspectives, Nov, pp 6-20.

Page, S. E., (2014). *Where Diversity Comes from and Why it Matters*, European Journal of Social Psychology, Vol. 44, pp 267-279.

Page, S. E. (2017). *The diversity bonus: How great teams pay off in the knowledge economy*. Princeton University Press.

Proudfoot, J., Jayasinghe, U.W., Holton, C., Grimm, J., Bubner, T., Amoroso, C., Beilby, J. & Harris, M.F., (2007). *Team climate for innovation: what difference does it make in general practice?*. International Journal for Quality in Health Care, Vol. 19(3), pp.164-169.

Raab, M., (2012). *Simple Heuristics in Sport*, International Review of Sport and Exercise Psychology, Vol. 5 (2), pp. 104-120.

Raab, M., & Gigerenzer, G., (2015). *The power of simplicity: a fast-and-frugal heuristics approach to performance science*, Frontiers in Psychology, Vol. 6 (1672), pp. 1-6

Reid, C., Stewart, E. and Thorne, G., (2004). *Multidisciplinary sport science teams in elite sport: comprehensive servicing or conflict and confusion?*. The Sport Psychologist, Vol. 18 (2), pp.204-217.

Rijpma, J.A., 1997. *Complexity, tight-coupling and reliability: Connecting normal accidents theory and high reliability theory*. Journal of contingencies and crisis management, 5(1), pp.15-23.

Rittel, H. W. J., & Webber, M. M., (1973). *Dilemmas in a General Theory of Planning, Policy Sciences*, Vol 4 (2), pp 155-169.

Roberto, M., (2004). *Strategic Decision Making processes: Beyond the efficiency-consensus trade off*, Group & Organization Management, Vol. 29 (6), pp. 625-658.

Sae-Lim, P., (2019). *Leadership competencies in turbulent environment*. Journal of MCU Peace Studies Vol, 7(6), p.11552266.

Salas, E., Rosen, M.A. and DiazGranados, D., 2010. *Expertise-based intuition and decision making in organizations*. Journal of management, 36(4), pp.941-973.

Sanfrey, A. G., Loewenstein, G., McClure, S. M., & Cohen, J. D., (2006). *Neuroeconomics: cross-currents in research on decision-making*, Trends in Cognitive Sciences, Vol 10 (3), pp 108-116.

Sanfrey, A. G., & Stallen, M., (2015) *Neurosciences Contribution to Judgment and Decision Making: Opportunities and Limitations*, in Keren, G., & Wu, G., (eds) The Wiley Blackwell Handbook of Judgment and Decision Making, First Edition, pp. 268-294, John Wiley & Sons, Ltd.

Sediri, S., Trommetter, M., Frascaria-Lacoste, N. and Fernández-Manjarrés, J., (2020). *Transformability as a Wicked Problem: A Cautionary Tale?*. Sustainability, Vol. 12(15), p.5895.

Simon, H. A., (1959). *Theories of decision-making in economics and behavioural science*, The American Economic Review, Vol. 49 (3), pp. 253-283

Simon, H.A., (1990). *Bounded rationality*. In *Utility and probability* (pp. 15-18). Palgrave Macmillan, London.

Shum, S. B., (2000). *Representing Hard-to-Formalise, Contextualised, Multidisciplinary, Organisational Knowledge*, AAI Technical Report, pp134-141.



Shraw, G., Dunkle, M. E., & Bendixen, L. D. (1995). *Cognitive Processes in Well Defined and Ill Defined Problem Solving*, Applied Cognitive Psychology, Vol 9, pp523-538

Tversky, A., & Kahneman, D., (1974), *Judgement under Uncertainty: Heuristics and Biases*, Science, New Series, Vol. 185 (4157), pp. 1124-1131.

Ullén, F., de Manzano, Ö. and Mosing, M.A., 2018. *Neural mechanisms of expertise*. In The Oxford Handbook of Expertise.

Walinga, J. (2017), *From Barriers to Breakthroughs: Leading Others Past Wicked Problems to Inclusive Practice Using Integrated Focus, Breaking the Zero-Sum Game (Building Leadership Bridges)*, Emerald Publishing Limited, Bingley, pp. 395-417

West, D., & Dellana, S., (2009). *Diversity of ability and cognitive style for group decision processes*, Information Sciences, Vol 179, pp542-558

West, M.A. and Lyubovnikova, J., 2012. *Real teams or pseudo teams? The changing landscape needs a better map*. Industrial and Organizational Psychology, 5(1), pp.25-28.

Westbrook, A., & Braver, T. S., (2015). *Cognitive effort: a neuroeconomic approach*, Cognitive Affect Behavioural Neuroscience. Vol 15 (2), pp 395–415.

Weick, K.E., (2004). *Normal accident theory as frame, link, and provocation*. Organization & Environment, Vol. 17 (1), pp.27-31.