

## **Sport Science**

### **From Design to Discovery: Coaching for and with Creativity**

#### **Abstract**

Creativity is increasingly recognised as a critical component of high performance in rugby, where players must continuously adapt, innovate, and solve problems in dynamic, pressurised environments. This presentation explores the nature of creativity in sport—what it is, how it emerges within team environments, and how it can be cultivated using a constraints-led approach to coaching. Drawing on contemporary research and practical coaching experience, it examines the conditions required for creativity to flourish, including exploration, freedom and risk-taking, tactical imagination, and collaboration. The session then demonstrates how coaches can apply ecological design principles such as clear learning intentions, constraint manipulation, representative learning design, and representative variability to create affordance-rich environments that invite creative behaviours. Finally, the presentation addresses key challenges associated with constraint-led coaching, including initial performance instability, reduced coach control, and the tension between physical periodisation and emergent learning.

Coaches and educators are invited to critically reflect on traditional methods and consider creativity as a shared, relational, and cultivated process.

## Carl Marshall

### Biography

With over 20 years of experience in teaching, coaching, and coach development, Carl Marshall is the Performance Coach Manager at the National Rugby League (NRL), where he leads the design and delivery of the long-term Performance Coach Program. While currently working in rugby league, Carl has made a significant contribution to rugby union, coaching at both national and international levels with teams including the Australian U20s, Queensland, and Australian Schoolboys. He has also led Brothers RFC to multiple Premierships as Head Coach and Senior Assistant Coach (2016, 2023, 2024). These achievements were underpinned by the development of a distinctive philosophy of play, culminating in an Integrated Game Model that strategically connected tactical phases of the game with core principles tailored to the players' skill sets, values, and beliefs. Currently completing a PhD at Queensland University of Technology (QUT), Carl's research



explores how creativity and decision-making emerge in rugby union, with a focus on ecological and constraints-led pedagogies. Through his varied roles in coach development, coaching, and academic research, he aims to contribute to a more dynamic and forward-thinking coaching landscape that supports the growth of both coaches and athletes.