The secret ingredient(s) to excellence - Cognitive and conative underpinnings of sport expertise

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How do experts achieve seemingly super-human like performance? The study of expertise helps us not only understand outstanding expert feats, but also processes and mechanisms leading to and underlying expert performance. In this talk, scientific understanding of sport expertise, as well as its underpinnings, will be discussed through multiple approaches, utilizing both experimental and correlational designs. The importance of kinetic, domain-specific knowledge, for sport experts ability of anticipation, and therefore superior performance, will be demonstrated using expert versus non-expert paradigm. Necessity of utilization of movement analysis for choosing parts of movement sequences relevant for anticipation; as well as necessity of combining outcome measures (accuracy and reaction time) for deepening our interpretation and understanding of underpinning cognitive processes will be emphasized. In addition to that, the role conative factors play in expert performance, (deliberate) practice and skill acquisition will be underlined. Analyses conducted on performance, practice and grit data, collected on a sample of elite youth Australian soccer athletes, showed that grit has a sizeable positive influence on performance, and its influence is both direct and indirect (through practice). Furthermore, grit has been shown to influence acquisition of practice during early development, differentiating even among the best of the players and leading to snowballing effects of the amount of accumulated practice hours. Finally, a brief glimpse will be given of an analysis of real-life performance data of NBA players' age-related changes, over the span of their careers, showing that greater increase in performance pre-peak (performance) was followed by shallower and slower post-peak decline, regardless of the position played. These findings not only help better understanding of sport expert performance, its development and retainment throughout lifespan, but also have the potential to extend beyond the laboratory by adding to the creation of training regimes and talent identification/development programs.