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Guest Editors
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performance setting, such as an opponent’s or team-mate’s relative position. Necessary adjustments were “scale free” since there were no typical sizes of variations. It can be concluded that intra-team and inter-team interactions in rugby union evolve in SOC regions signifying that players’ decisions and actions were governed by local emergent interactions rules rather than by outside agents or pre-determined actions.

REFERENCES


The influence of injury in the players’ and team’s self-efficacy dynamics in basketball

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This study examined the dynamics of Self-Efficacy (SE) and injury events in a basketball team for a 10 week period (28 training sessions and 10 games). The team was composed of 13 players, aged 19-44 years (M=26.38; SD= 6.37), 1 coach, and 1 physiotherapist. A total of 887 Questionnaires of Self-Efficacy (SE) (McAuley & Mihalko, 1998), and of Retrospective Assessment of Efficacy (RAE) were filled by players and during training sessions and during the games, using an analogical scale with values between 0% and 100%. The Questionnaires were validated by an expert panel and tested in a preliminary study. 19 Medical Questionnaires (MQ) assessing the functional state of the player immediately “After Injury” and when he was “Returning to Training” were filled in by the Physiotherapist and the Players. Each participant filled in the questionnaire both before and after every training session or game during 10 consecutive weeks, where each week was considered a microcycle. The SE of the group of players without injury was bigger than that of the group of players with injury. This was particularly evident on microcycle 4. The RAE of the group with injuries had irregular progress, contrasting with the RAE of the group without injury (figure 1). The SE and RAE prevision model does not predict with statistical significance Game Result. On the contrary, these variables - SE (p>0.05) and RAE (p<0.001) - significantly predict the Most Valuable Player for each game (R²=0.195). We examined the relationship between SE variables (Psychological Variables) and the Injury and No-injury Groups through out time (Time) with a MM MANOVA test, for the training sessions and for the games (PV×G×T). For a better analysis we divided the Game and the Training into Eight Microcycles, and Compe-
Figure 1. - Players’ Injury influence on Self-Efficacy and Retrospective Assessment of Efficacy throughout time. a) Injury Group (mean values of players with injury during the study); b) Without Injury Group (mean values of players without injury during the study)

Legend: SE = Self-Efficacy; RAE = Retrospective Assessment of Efficacy; CPSE = Coach Perception of Self-Efficacy; CPRAE = Coach Perception of Retrospective Assessment of Efficacy; T = Training; G = Game
tition Periods. The effects of time were significant in all but one microcycle, as well as in the Games, and Competition Periods. Team SE changes according to each player’s SE, and team SE changes with unexpected events (e.g., injury). Player’s SE is influenced by injury. SE and RAE predict the MVP. The dynamical SE process changes through out time according with the microcycle, the temporal scale and the context.

REFERENCES


Game creativity analysis by means of artificial neural networks

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This contribution presents a new neural network approach for analysis of creative behaviour in ecological valid situations of team sports (Memmert & Perl, 2009). The used concept of Dynamically Controlled Neural Gas (DyCoNG) completes a combination of Growing Neural Gas (Fritzke, 1997) and Dynamically Controlled Network (Perl, 2004) by means of quality neurons. Following the concept of Growing Neural Gas, the neurons of DyCoNG do not form a matrix of fixed size and dimension but build a graph-like structure with a variable number of neurons and a flexible topology. This allows for time-dynamically developing neuron topologies which are able to adapt to changing structure and behaviour of dynamic systems. In turn, this “topology dynamics” of generating neurons on demand can be controlled by frequency and relevance of training stimuli – as is done in case of the DyCoN-approach: If a training stimulus is new and/or rare it has high information theoretical relevance compared to old or frequent ones and therefore is represented by a specific “quality neuron”, which is either generated or, if already existing, saved against disturbing entries. This means, a quality neuron reflects the rareness and relevance of a piece of information. It therefore can measure the originality of recorded activities and recognize striking ones like rare key events. The DyCoNG-approach was validated using data from a longitudinal field-based study (9 measurement times). The creative behaviour of 42 subjects in standardized game test situations was tested in a creative training program lasting six months. Additionally, several systematic tests were run in order to analyse the general and the specific behaviour of the network in simulated training situations, which avoided artefacts and facilitated validation as well as development of processing strategies. First, the results from DyCoNG-based analysis show that the network is able to separate main process