PERFORMANCE UNDER PRESSURE: CARLSTEDT PROTOCOL (KRUGER EDITION FOR RUGBY) BY DR PIETER KRUGER

The author is a clinical and sport psychologist who has been working in rugby for the past ten years. He obtained B.A.(Hons.) Psychology, (Hons.) Sport Science, M.A. (Clinical Psychology) and Ph.D. degrees from the University of the Free State and North West University in South Africa.

He conducted his Ph.D. research on the South African Super 12 teams (2002-2004) and also acted as a consultant psychologist on the periphery to two of the Super 12 teams during this period. Furthermore, during the past seven years he had been involved with a number of professional and national teams including the South African senior Netball team, South African senior Judo team, South African U21 rugby team, North-West University Rugby Institute First XV (National Club Champions), as well as the Leopards Rugby Union (Vodacom Cup Finalists and Currie Cup Top 8). He moved to London early in 2006 and joined Harlequins as their first team sport psychologist and is currently still in the role.

Introduction:

Comprehensive preparation is the key to success at any level of sports participation, hence the amount of time and money invested by professional rugby players to ensure sufficient nutritional intake, adequate technical knowledge, well-rehearsed match strategies and highly trained physiological capacities. At elite level, however, the difference between good and great players is often their level of psychological preparation and how well they can apply their skills in high-pressure situations.

An important part of this psychological preparation is the development of the ability to cope with the psychological stress that accompanies elite sports participation. In this coping process there is individual variability in people's responses to stress, which means that each individual will probably deal with the stressful situation in his own way. This is due to the fact that there are a number of adaptive resources and coping strategies which individuals could utilize in dealing with high stress/pressure (Holahan & Moos, 1994; Moos & Shaefer, 1993).

Psychological skills and sports performance:

Researchers found that athletes with high levels of psychological skills performed more consistently than athletes with low levels of psychological skills (Nideffer *et al.*, 2001). This could be explained by the fact that higher levels of psychological skills have been shown to have a positive correlation with better execution of general motor and cognitive tasks (Hird, Landers, Thomas & Horan, 1991), especially when athletes are fatigued and under physical stress (Booras, 2001). In accordance with these findings, research by Feltz and Landers (1983),

as well as Greenspan and Feltz (1989), has confirmed that subjecting athletes to the approaches inherent in various thought processes has a beneficial impact on motor skill performance.

The question arises whether a specific selection of psychological skills exists that would facilitate exceptional sports performance when developed optimally. One factor that should be taken into account is that the type of sport that athletes compete in will determine the specific psychological skills that they will need in their quest for better performance (Martens, 1987).

Hale and Collins (2002) stated that, for rugby players to play to their full potential, they must be physically, technically, nutritionally and psychologically prepared. They further added that the best rugby players in the world often reach their full potential by incorporating psychological training into their daily training and pre-match routines. It thus appears that a key difference between a good and average performance in elite rugby could be the level of psychological skills, rather than just good physical abilities (Hale & Collins, 2002; Hodge & McKenzie, 1999). However, it is still unclear whether the overall psychological skills level, or rather the eminence in certain specific psychological skills, would differentiate between good and exceptional rugby players. This latter statement is one of the questions that we, as sports psychologists, constantly try to shed more light on.

Research in this regard is complicated since the effect that psychological skills will have on a specific player might be influenced by a number of other factors. Environmental influences, crises and life transitions, the cognitive appraisals and coping strategies that players employ as well as the state of their general health and well-being may influence the impact of psychological skills (Mahoney, Gabriel & Perkins, 1987; Moos & Shaefer, 1993; Shaw, 2001; Smith & Christensen, 1995; Smith et al., 1995). All these factors should be kept in mind by the sports psychologist when working with elite rugby players.

Empirically validated applied sport psychology:

There is research and information in abundance about the physical and technical aspects of rugby, but there is still a relative scarcity of valid and reliable information regarding objective psychological performance skills in this game. Teams who employ sports psychologists will rightfully focus on team psychological aspects and skills, but very often there is not enough focus on the individuals the team comprises of. Since the most prominent theory of peak performance (Individual Zone of Optimum Functioning [IZOF]) stresses the need to establish individual profiles of athlete arousal (Hanin, 2000), one would expect there to be a much greater emphasis on the psychological aspects of individuals within a rugby team as well. With this in mind, I started to focus more on individual players within the team, in an attempt to further contribute and improve the team psychological aspects as well.

In order to focus more on individual psychological aspects we, at Harlequins, joined forces with American Board of Sport Psychology chairman, Dr Roland A Carlstedt, to use the Carlstedt Protocol. The Carlstedt Protocol is an empirically validated applied sport psychology system that was designed to bring accountability to the field of sport psychology and mental training on the individual level. Important components of the protocol include soft

and hardware that is used to assess psychologically mediated heart rate variability before, during and after practice and competition, as well as guide a special heart rate variability biofeedback protocol. The results yielded by this type of assessment method enables the sport psychologist to better determine and predict a player's performance under pressure. It will also help to devise and implement individually tailored sport psychological skills programmes to deal with the perceived strengths and weaknesses of individual players. This would then, hopefully, further contribute to the effectiveness of the team psychological aspects.

Since this system was developed mainly on tennis players and baseball players, and is still in the early stages of being selectively used for drafting in the NFL, I needed to adjust and adapt it for use with a rugby union team. I am therefore currently still in the process of editing the outcome measures to couple with the biological feedback and information (Kruger-Edition for Rugby).

Carlstedt Protocol (Kruger Ed.):

When using the Carlstedt Protocol, it is firstly necessary to establish an individual psychological profile on the players that you will be working with. This is derived from the Carlstedt Subliminal Attention-Reactivity-Coping Scale - Athlete (CSARCS-A; Carlstedt, 2007a). This validated test measures subliminal attention (including components of hypnotic susceptibility; HS/SA), neuroticism/subliminal reactivity (N/SR) and repressive coping/ subliminal coping (RC/SC). Hypnotic susceptibility/subliminal attention, neuroticism/subliminal reactivity and repressive/subliminal coping are considered traits and behaviours that have distinct mind-body correlates and dynamics. Research has localized them in specific brain regions and as being associated with distinct patterns of EEG, heart rate variability and muscle tension (Carlstedt, 2004a; Davidson, 1984; Davidson, Schwartz & Rothman, 1976; Tomarken & Davidson; 1994).

The abovementioned measures are described as the *Primary Higher Order* (PHO) factors in mediating performance. This would be especially important and prominent during critical, high-pressure moments in a competition where the player might have a perception that a specific situation is very crucial. These perceived crucial situations would make the player more vulnerable to negative intrusive thoughts. According to the research done by Dr. Carlstedt, these measures have been shown empirically to supersede all other psychological variables in affecting and predicting a sportsman's psychological performance in high-pressure situations. This seemed to be happening especially during critical moments, when all these measures were interacting together (Carlstedt, 2001, 2004a). These measures are intimately linked to key components of peak performance, including attention (focus), intensity (physiological reactivity), cognitive processing, motor readiness/control and emotion. In addition to guiding psychological training, the established Individual Profile is a strong predictor of intervention susceptibility, compliance tendencies, pain threshold and coachability (Carlstedt, 2007; Wickramasekera, 1988).

The Primary Higher Order Factors:

The identified Primary Higher Order Factors all play an important part in players' performance under pressure. The first of the PHOs called Hypnotic Susceptibility (Subliminal Attention; HS/SA) is also described as the ***Flow Zone*** trait in peak performance, which is marked by intense but effortless focus. Rugby players who are high in this measure would be more open to visually based interventions like mental imagery and hypnosis.

The second PHO called Neuroticism (Subliminal Reactivity; N/SR) can be viewed as the ***Zone Disrupter***. This specific trait is associated with excessive cognitive distortions such as negative catastrophic thinking and excessive physiological reactivity that can disrupt motor performance. This can happen especially when a player is in a high-pressure situation and under stress.

The last PHO called Repressive Coping (Subliminal Coping; RC/SC) can also be seen as the ***great facilitator*** that can block the negative effects of high neuroticism/subliminal reactivity, thereby facilitating focus on the task at hand. The players with this also seem to be dealing much better with negative intrusive thoughts or even seem impervious against the thoughts that might be generated. One downside to players with a high level of repressive coping is their tendency to be convinced of their ability and self-perceived superiority is so powerful that they may fail to recognize technical and physical deficiencies and not listen to constructive criticism. They also tend to be sceptical and non-compliant when it comes to participating in psychological interventions. On the other hand, "mental toughness" is associated with high levels of this measure.

Psychological skills profiles and norms:

It is always important to be able to compare any measurement or score against a norm from a similar population. In order to create a possible psychological skills profile or norms for elite rugby players, I conducted research on the South African Elite rugby players during 2002-2004. The test population consisted of all four South African Super 12 teams, four of the best provincial teams and the best four club teams. The research primarily focused on assessing these players' psychological skills, state anxiety and coping abilities. Super 12 rugby players had practically significant better scores on four of the seven subscales of the measure instrument than club rugby players. In contrast, Super 12 and provincial rugby players did not differ significantly on any of the seven subscales (coping under pressure; coping with adversity; concentration; goal-setting; performance motivation; state anxiety; coachability). The data was used to compile a psychological skills profile that could serve as a guideline for the levels of psychological skills one would ideally like to see at the elite level of rugby.

The results seemed to support the suggestion made by other researchers that the key difference between a good performance and a poor performance on an elite level in rugby is often the level of psychological skills, rather than just good physical skills. Furthermore, no significant differences could be found between forwards and backline rugby players in this study with regard to their psychological skill levels. There were also no significant

differences in psychological skills between any of the different positional groupings (props, hookers, locks, loose forwards, inside backs, and outside backs) of senior South African rugby players. Coupling this information with the data obtained from the Carlstedt protocol might, over time, shed more light on the complex psychological game that is rugby. This will hopefully enable me to devise effective psychological skills intervention programmes for the players in our team.

Conclusion:

One of the challenges when implementing the Carlstedt Protocol (Kruger Ed.) is to overcome the time constraints in an already busy week for the players, to get the best possible data from the individual assessments in the time available. It is important to assess the players as often as possible, especially before and after outcome focussed training sessions, as well as games. Measurements are done by connecting the player via a galvanic skin receptor to a laptop, using the software for measuring psychologically mediated heart rate variability. This also provides an idea of the player's autonomous nervous system activation (sympathetic/parasympathetic) which in turn will be indicative of the player's levels of state anxiety (fight or flight reaction). Building a good profile will allow the sports psychologist to get insight into the players' pre-game psychological activation, as well as possible reactions in high-pressure situations, which will give the sports psychologist a good idea where to start with the correct intervention / tailoring a suitable psychological intervention package.

As a sport psychologist in a team sport, it is crucial to get the balance right between team and individual processes. From a team perspective, players need to share the same vision on the field and also be able to communicate clearly in high-pressure situations. Individually, players need a good level of mental toughness to be able to focus on their own game and performance, as well as positively contributing to the team processes and performance.

This will be an ongoing process for more than one season and will be a matter of trial and error to standardise and adjust this protocol for rugby. It will hopefully aid me in getting the best out of our individual players, especially the decision makers in the team, when playing in high-pressure games and situations. In time, this science-based applied sport psychological assessment tool would hopefully aid us in gaining exceptional insight into the mental game, better predict psychological tendencies, intervene more effectively and utilise databases of mind-body measures to empirically quantify the player selection, development and mental preparation process.

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