

# **Periodisation of Psychological Skills Training**

## **A Critical Review**

For generations, scientists, coaches, and athletes, have sought training systems which are effective in the long term, offer an optimal approach to athletic development, and enable the athlete or team to peak their abilities at precisely chosen times (Issurin, 2007). Achievement of these objectives requires the development of strategies that optimise all elements of the training programme; athletes or teams must prepare themselves via a training process that addresses physical, technical, tactical, and psychological elements (Smith, 2003). The long-term challenge of planning and managing physical training is commonly approached via the concept of periodisation, a phasic manipulation of training variables over time (Stone et al., 1999). Interventions by sport psychologists have focused on programmes to develop the athletes' mental skills; this has been termed 'psychological skills training' (PST) (Vealey, 1988). Recently it has been proposed that periodisation is a viable tool in the delivery of psychological skills training (Balague, 2000; Holliday et al., 2008). This review will first outline the concept of periodisation from a physical training perspective. It will then describe the basic model of PST and consider the use of periodisation in PST interventions. Lastly it will review available research data on the use of periodised approaches in the delivery of PST programmes, and address current issues and practical applications.

### ***Theory of Periodisation of Physical Training***

Periodisation is a methodological planning tool serving as a framework directing programme development for the athlete and coach (Smith, 2003). The fundamental objectives of periodisation of physical training are to maximise the

training effect, manage the effects of fatigue, and prevent accommodation or overtraining (Plisk & Stone, 2003). This process of 'training stress/fatigue management' involves the use of short, medium and long term planning and classically involves the cyclical manipulation of volume and intensity of training. Volume has been defined as the total amount of work performed in a given session or over time (Stone, 1999). Intensity measures vary between sports, for example where distance and time are factors speed is the measure of absolute intensity (Smith, 2003), whereas in resistance training activities, intensity refers to a percentage of an individual's maximum effort, the highest intensity being a maximal effort where the movement that can only be performed once (Fleck, 1999). Classical periodisation involves the division of training into basic structural units, the training session, training day, microcycle (e.g., one week), mesocycle (e.g., one month) and macrocycle (e.g., one year) (Siff, 2000 p.314). Training can be further divided into phases namely preparation, competition, transition, and recovery. The nature of training moves from extensive (high volume / low intensity) to intensive (high intensity / low volume) workloads and from general to specific tasks over a given period of time (Plisk & Stone, 2003). The emphasis fluctuates between intensity and volume to achieve specific goal related adaptations (Plisk, 2004). Most current interpretations of periodisation are based on models proposed and developed in the Soviet Union, and first published by sport scientist Leo Matveyev in 1965 (Verkhoshansky, 1999). Broad support for this methodology exists within the practical strength community and it forms the framework of much western strength training programming particularly in the United States (Ebben et al., 2001; Durrell et al., 2003; Ebben et

al., 2004; Simenz et al., 2005; Ebben et al., 2005). Research into the effectiveness of periodisation of physical training has not been conclusive. Although evidence exists to support periodisation methods, most research has focused solely on strength and power training and has tended to suffer from a range of methodological problems (Fleck, 1999)

Despite the popularity of the classical Matveyev model, it is important to point out that simplistic ‘one model’ interpretations do not reflect the range of ways the methodology can and has been applied (Siff, 2000, p.317). Plisk and Stone (2003) discussed the relationships and connections to Game Theory, a ‘planned unpredictability to outmanoeuvre the body’. Verkhoshansky (1977) proposed the ‘conjugate’ or ‘coupled successive system’ as a viable method for elite athletes, whereby a concentrate block of unidirectional training is undertaken. Issurin (2007; 2008) outlined the use of ‘block periodisation’, where concentrated workloads are applied to a minimal number of specifically targeted physical abilities. Adapting ideas from the field of cybernetics, Siff (2000) highlighted the need to consider the athlete’s daily perception of intensity and loading as well as the preplanned scheme. Siff referred to this as ‘cybernetic periodisation’ where subsequent training input is modified based on feedback from the athlete’s current performance state.

### ***Psychological Skills Training***

The last two decades have seen a significant increase in the interest in PST and psychological preparation is now a key part of the training process (Holliday

et al., 2008). This psychological preparation aims to provide an athlete or team with techniques to overcome emotional and mental barriers (Blumenstein, Lidor, & Tenenbaum, 2007). For this to be achieved it is now understood that athletes must possess and use a range of psychological skills. There has been no clear classification of psychological skills (Balague, 2000), however, Vealey (1988) proposed three groups of skills, describing them as foundation (volition, self-awareness, self-esteem, self confidence); performance (optimal physical arousal, optimal mental arousal, optimal attention), and facilitative (interpersonal skills, lifestyle management). In developing these skills athletes will often undertake mental training programmes, commonly referred to as psychological skills training. Vealey defined this training as “techniques and strategies designed to teach or enhance mental skills that facilitate performance and a positive approach to sport competition” (p.319). The main premise of PST is that the key skills are learnable and, as with physical skills, are therefore improvable through consistent training (Balague, 2000). Research into the effectiveness of psychological interventions has been generally positive indicating its ability to enhance performance (Greenspan & Feltz, 1989; Vealey, 1994; Weinberg & Comar, 1994). However, concerns have arisen regarding research design (Greenspan & Feltz, 1989), and overall long term effectiveness, performance, and peaking (Holliday et al, 2008). Vealey (1988) discussed three important areas within the development of PST interventions. Firstly, the need for sport specific PST programmes whereby psychological practice was incorporated with physical training. Secondly, emphasis on competition plans whereby a systematic structure of PST delivery was established. Thirdly, the need for a phasic approach

to learning the skills. Periodisation of training as established in physical conditioning, has the potential to address these practical issues, and has been proposed as a potential framework for enhancing the effectiveness of PST interventions (Blumenstein, et al., 2007; Holliday et al., 2008).

### ***Periodisation and Psychological Skills Training***

Despite its popularity in physical training, until recently periodisation had received limited interest as a tool for sport psychologists in developing an athlete's mental skills (Balague, 2000; Poczwadowski et al., 2004; Blumenstein et al., 2007; Holliday et al., 2008). It has been argued that effective psychological preparation cannot stand alone, and should be integrated with all other elements of the athletic preparation, namely physical, (Vealey, 1988) and physical, tactical, and technical (Blumenstein, Lidor, & Tenenbaum, 2005). This is supported (Poczwadowski et al., 2004), and Harmison (2006) who proposed that athletes are multidimensional, and all elements of athletic preparation interact to generate performance. Smith, (2003 p.1119) described this as an "integrated model of athletic performance". Further to this, it has been suggested that integration might lead to better understanding for coaches and athletes regarding the place of PST within the training process, and that designing PST interventions using the periodisation frameworks developed in physical training, provides promise for a more consistent and powerful intervention (Holliday et al., 2008). Periodisation in PST might address both long-term development of the individual and allow manipulation of the training process to bring them to a peak at specific times and places. While acknowledging that a range of possible

implementation strategies exist within the periodisation paradigm, Holliday et al. (2008) recommended a “literal translation” of periodisation concepts following the classical model. They proposed that periodised PST could progress over consecutive training cycles, from education and acquisition of basic tools and skills, through to practice, implementation, and finally performance. Using the periodised framework, education and acquisition would be the focus during recovery and preparation phases and practice, implementation and performance during the final stages of preparation and during the competition phase. Evaluation during the transition phase would lead to a new updated intervention plan for the next cycle, this allows for long-term development directly reflecting individual needs and differences.

The basic premise of applying a periodisation model to PST interventions, is that different psychological skills are more relevant than others depending on the needs of the athlete, demands of the sport, and phase of training, and that the PST programme should track the phases of the physical conditioning regime (Balague, 2000). Training is divided into specific time periods or phases namely preparation, competition, transition and recovery, and specific psychological skills chosen to match the phase of training and goals for that period. One of the key tenets of the periodised model is the cyclical manipulation of volume and intensity. These variables have been well defined within the conditioning literature (Plisk & Stone, 2003; Stone, 1999; Fleck, 1999; Smith, 2003) therefore clear operational definitions within PST are essential. Holliday et al. (2008, p.207) described volume as “number of targeted mental training tools, skills,

plans, the number of exercises performed for each, and the time spent on each exercise” Regarding intensity they suggested two factors of relevance, difficulty or complexity of skills and the importance of competitive success. They propose with these working descriptions the classical wave like increased intensity and decreased volume over each training cycle as seen in physical training is possible.

Periodisation provides a long term planning and peaking framework for delivery of PST that could have applications for both individuals and teams. A number of investigations into the applications of periodisation to physical training have been published, and although generally positive have suffered from methodological problems (Fleck, 1999). Recently, investigations into the efficacy of periodisation of PST have begun to appear within the literature, and a number of authors have attempted to apply a periodised model to a PST intervention.

### ***Research into Periodisation of Psychological Skills Training***

Balague (2000) proposed a series of recommendations regarding the structure and content of a periodised approach to PST. Building on the concept of delivering PST in conjunction with the other training elements, (physical, tactical, technical), a model was proposed for the periodisation of PST based on the classical Matveyev style approach with phases of general preparation, specific preparation, precompetition, main competition and transition. A range of initial suggestions was made regarding specific content that could be applied within each phase. Holliday et al. (2008) applied this classical approach and reported a case study with an elite, international, male cross- country skier who had little

previous experience of PST. Baseline testing was performed to establish initial mental capabilities using the test of performance strategies (TOPS), self confidence and arousal control were identified as the skills needing most attention. The athlete prioritised his competitive goals for the year and a 43 week training programme was divided into preparatory, competition, peaking and recovery mesocycles with peaks planned for national and international events. During the programme, improvement in precompetition self-confidence levels was reported, but it was not clear whether this was subjective feedback from the athlete or objective test data. The athlete's competitive performance was inconsistent and the season was cut short by illness. Although the PST of this athlete was periodised the athlete had little previous experience of PST. From the information presented, there is no evidence to indicate that a periodised approach to delivery is superior to any other that might be used. Also working with individual athletes this time in judo and rhythmic gymnastics, Blumenstein and Lidor, (2007) presented a case study in the application of a quadrennial psychological intervention. No subject information other than elite status was provided. This work looked at preparing an athlete for Olympic participation. The programme was subdivided into general and specific interventions, and then further divided included preparation, competition and transition phases. The PST intervention was mapped alongside the tactical, technical, and physical elements of the training programme, linking in to the periodised framework being applied to their overall training. No data was provided to assess effectiveness of the intervention, however the authors proposed that the PST interventions should firstly be delivered in a phased approach matching the

needs of the athlete and in line with their stage of preparation. Secondly, that to maximise the effectiveness of the PST a co-operative approach with the other training elements (tactical, technical, physical) was necessary. Again working with individuals, Blumenstein, Lidor, & Tenenbaum (2005) reported a 15 month case study intervention with elite judokas; no subject numbers or details were provided. The PST was delivered as part of a multidimensional training programme alongside physical, technical and tactical training. Training was divided into a preparatory phase – which included general and specific preparation – a competition phase, and a transition phase. The PST itself was not periodised, it was mapped in accordance with the demands, needs, and overall periodisation of the total training programme. As volume and intensity of training were manipulated, in accordance with a periodised framework, the authors selected a psychological intervention they felt was best suited to the demands on the athlete at that time. For example, during the general preparation phase when the overall physical training volume was high, relaxation and mental recovery techniques were used. Although the authors reported subjective descriptions of success from the athletes, no objective measures to assess the PST intervention were provided. It is therefore difficult to assess firstly whether the programme resulted in performance improvement and secondly whether the mapping PST within a periodised approach is any superior to other alternative approaches.

Further work has investigated periodised PST within a team setting. Lidor, Blumenstein, and Tenenbaum (2007) reported a case study with a team of

fourteen elite, professional male basketball players. A theoretical basis for periodisation was proposed and a classic phased training program described. Each training cycle consisted of a preparation phase, which was subdivided into general and specific, a competition phase and a transition phase. The PST intervention was delivered within an integrated model alongside the other components of training programme. PST was delivered to map the overall training periodisation plan and needs of the athletes rather than as a stand alone intervention. The authors proposed that objective measures of team performance were valid indicators of programme success; the team achieved its highest ever divisional ranking. Further to this they highlighted improvement in player performance statistics on two point and three point shooting variables as positive outcomes. No other data is provided to evaluate the intervention.

Two relevant, but unpublished reports have also been presented. Lidor, Blumenstein, and Tenenbaum (2007a) described a case study of a squad - no numbers given - of elite male club footballers (Israeli Division One). The PST intervention was integrated with the periodised training programme of the team using the preparation, competition, recovery approach and specific techniques and skills taught in line with the requirements of the athletes, team and phase of preparation. Baseline measures were assessed using the state-trait anxiety inventory (STAI) and sport competition anxiety test (SCAT) however follow up on the assessment to assess progress was not reported and no evaluative data provided. Lidor et al. (2007a) also presented an individual case study of a rhythmic gymnast. The delivery of PST again utilises training phases using a

periodisation format with a preparation phase – subdivided into general and specific preparation – and competition phase. The programme is not delivered in directly periodised way, but rather linked to the periodised framework of the total training programme. Although detailed information is provided regarding the methodology of intervention, no information is offered regarding results. This again means this work is difficult to assess.

### ***Current Issues and Practical Applications in the study of Periodisation of PST***

Poczwadowski et al. (2004) stated that sport psychologist's still lack adequate guidelines regarding the optimal approach to implementing a PST programme, and despite subsequent work, guidelines still remain unclear. Ongoing work using the periodisation framework can provide new insight and information to refine the delivery of PST in sport. Several issues should be raised regarding this ongoing work and the application of periodisation to a PST delivery model. No unified approach currently exists within the PST literature regarding periodisation, Holliday et al. (2008) described a PST intervention that was specifically periodised and approached the learning of mental skills in the way conditioning specialists have approached the development of physical abilities. In this approach the athletes' mental skills are developed systematically over time with relevant skills being developed over consecutive macrocycles. Skills taught are divided into preparation – general and specific – competition and recovery. Volume and intensity of the PST is manipulated in a cyclical fashion over time. In contrast, Blumenstein et al. (2005), Blumenstein and Lidor

(2007) and Lidor, Blumenstein, & Tenenbaum (2007), described PST interventions that were integrated into a total periodised training process. This work integrated the PST into the athlete's total training framework, which was designed using the periodisation methodology. The volume and intensity of training was conditioning driven and PST designed to support that process. Further to this, the concepts of volume and intensity of training have clear definitions within the conditioning literature but despite attempts at classification (Holliday et al., 2008), no clear definition has been established within sport psychology. A working definition of these terms is fundamental to researching and applying this model.

The model of periodisation selected for PST, and the phasic approach described, originate from the competitive arena of 40-50 years ago and do not reflect the patterns of sports competition within a modern era. Within sports that have long seasons with multiple competitive events (e.g. soccer, rugby), complex long term planning of interventions might not be possible or the most effective strategy. Developing a hybrid of the periodisation model reflecting the alternating use of general and specific PST might provide a better framework for practitioners to deal with these issues.

A range of approaches to periodisation exists in the physical conditioning literature, (e.g., Verkhoshansky, 1977; Siff, 2000; Plisk & Stone, 2003; Issurin, 2007, 2008). The current application to PST has focused on the classic Matveyev approach, and has yet to explore the breadth and depth of understanding of

periodisation as applied to physical training. Further considerations in PST research and delivery include variations that consider demands of the sport, individual responses to training and the individual stages of development.

So far investigations into periodisation of PST have been difficult to assess. It appears that researchers have been more interested in applying the concepts of periodisation than in constructing rigorous experiments to test its validity. Current research models have relied solely on case study interventions, there has been little standardisation of procedures and measures of success have not been clearly evident; periodised PST might be no more effective than non-periodised PST. Further work might consider utilising control groups or direct comparison between periodised and non-periodised interventions. Researchers need to address these areas if periodisation of PST is to gain support. Furthermore, much of the work carried out so far has been undertaken by a small group of authors working together who appear to be strong advocates of this approach. More work by a broader range of authors needs to be done to balance any potential bias issues.

### ***Summary and Conclusion***

Within the field of athletic preparation optimal approaches to long term development as well as strategies that enable athletes to peak at chosen times are major goals. Periodisation of physical training is both a well-established method of long-term athlete development, and a competitive preparation tool within the physical training domain. However, despite its popularity amongst practitioners,

there remain both research and theoretical questions over its application. Sports psychologists have focused on the development of mental skills, and it has been proposed that periodisation might be an effective tool in this development.

Periodisation strategies are now being applied to the application of PST, however, so far, research has been limited to a small number of case study reports. A range of possible approaches have been used in periodising physical training, further work is required to define more accurately the periodisation methodology and terminology within psychological skills training. Researchers also need to find ways to measure its effectiveness against current methods of delivering PST.

### **References**

- Balague, G. (2000). Periodisation of psychological skills training. *Journal of Science and Medicine in Sport*, 3 (3), 230-237.
- Blumenstein, B., Lidor, R., Tenenbaum, G. (2005). Periodisation and planning of psychological preparation in elite combat sport programmes: The case of judo. *International Journal of Sport & Exercise Psychology*, 3, 7-25.
- Blumenstein, B., Lidor, R., Tenenbaum, G. (2007). Sport Psychology and the theory of sport training: an integrated approach. In B. Blumenstein, R. Lidor, & G. Tenenbaum (Eds.), *Perspectives on Sport and Exercise Psychology, Vol. 2 Psychology of Sport Training* (pp. 8-18). Oxford, UK: Meyer & Meyer Sport.
- Blumenstein, B., & Lidor, R. (2007). The road to the Olympic games: a four-year psychological preparation program. *The Online Journal of Sport Psychology*, 9 (4) 15-28.
- Durell, D.L., Pujol, T.J., & Barnes, J.T. (2003). A survey of the scientific data and training methods utilized by collegiate strength and conditioning coaches. *Journal of Strength and Conditioning Research*, 17(2), 368-373.
- Ebben, W.P., & Blackard, D.O. (2001). Strength and Conditioning Practices of National Football League Strength and Conditioning Coaches. *Journal of Strength & Conditioning Research*, 15(1), 48-58.
- Ebben, W.P., Carroll, R.M., & Simenz, C.J. (2004). Strength and conditioning practices of national hockey league strength and conditioning coaches. *Journal of Strength and Conditioning Research*, 18(4), 889-897.

- Ebben, W.P., Hintz, M.J., & Simenz, C.J. (2005). Strength and conditioning practices of major league baseball strength and conditioning coaches. *Journal of Strength & Conditioning Research*, 19(3), 538-546.
- Fleck, S.J. (1999). Periodised strength training: A critical review. *Journal of Strength and Conditioning Research*, 13(1), 82-89.
- Greenspan, M.J., & Feltz, D.L. (1989). Psychological interventions with athletes in competitive situations: A Review. *The Sport Psychologist*, 3, 219-236.
- Harmison, R.J., (2006). Peak performance in sport: Identifying ideal performance states and developing athletes psychological skills. *Professional Psychology: Review and Practice*, 37 (3) 233-243.
- Holliday, B., Burton, D., Sun, G., Hammermeister, J., Naylor, S., & Friegang, D. (2008). Building the better mental training mousetrap: Is periodisation a more systematic approach to promoting performance excellence? *Journal of Applied Sport Psychology*, 20:2, 199-219.
- Issurin, V. (2007). A modern approach to high-performance training: The Block Composition concept. In B. Blumenstein, R. Lidor, & G. Tenenbaum (Eds.), *Perspectives on Sport and Exercise Psychology, Vol. 2 Psychology of Sport Training* (pp. 216-233). Oxford, UK: Meyer & Meyer Sport.
- Issurin, V. (2008). Block periodisation versus traditional training theory: a review. *Journal of Sports Medicine and Physical Fitness*, 48(1), 65-75.
- Lidor, R., Blumenstein, B., & Tenenbaum, G. (2007). Psychological aspects of training in European basketball: Conceptualisation, periodisation and planning. *The Sport Psychologist*. 21, 353-367.

- Lidor, R., Blumenstein, B., & Tenenbaum, G. (2007a). Periodisation and planning of psychological preparation in individual and team sports. In B. Blumenstein, R. Lidor, & G. Tenenbaum (Eds.), *Perspectives on Sport and Exercise Psychology, Vol. 2 Psychology of Sport Training* (pp. 137-161). Oxford, UK: Meyer & Meyer Sport.
- Plisk, S.S., & Stone, M.H. (2003). Periodisation strategies. *Strength and Conditioning Journal*, 25(6), 19-37.
- Plisk, S.S. (2004). Periodisation: Fancy name for a basic concept. *Olympic Coach*, 16 (2), 14-17.
- Poczwadowski, A., Sherman, C.P., & Rivazza, K. (2004). Professional philosophy in the sport psychology service delivery: building theory and practice. *The Sport Psychologist*, 18, 445-463.
- Siff, M.C. (2000). *Supertraining*. (5<sup>th</sup> ed.). Supertraining Institute, Denver. USA.
- Simenz, C.J., Dugan, C.A., & Ebben, W.P. (2005). Strength and conditioning practices of national basketball association strength and conditioning coaches. *Journal of Strength & Conditioning Research*, 19(3), 495-504.
- Smith, D.J.S. (2003). A framework for understanding the training process leading to elite performance. *Sports Medicine*, 33 (5), 1103-1126.
- Stone, M.H., Pierce, K.C., Haff, G.G., Koch, A.J., Stone, M. (1999). Periodisation: Effects of manipulating volume and intensity. Part 1. *Strength and Conditioning Journal*, 21(2), 56-62.
- Vealey, R. S. (1988). Future directions in psychological skills training. *The Sport Psychologist*, 2, 318-336.

Vealey, R.S. (1994). Current status and prominent issues in sport psychology interventions. *Medicine and Science in Sports and Exercise*, 26 (4), 495-502.

Verkhoshansky, Y.V. (1977). *Fundamentals of special strength training in sport*. Sportivny Press, Michigan. USA.

Verkhoshansky, Y.V. (1999). The end of periodisation of training in top-class sport. *New Studies in Athletics*, 14(1), 47-55.

Weinberg, R.S., & Comar, W. (1994). The Effectiveness of psychological interventions in competitive sport. *Sports Medicine*, 18(6), 406-418.

© Gary Stebbing 2009