WORLD-CLASS SPRINTERS'TRAINING AND EFFECTIVE COACH PLANNING

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Introduction

Central to the practice of coaching is the ability to plan an athlete's training (Lyle, 2002). Effective planning is what links a coach's aspirations, knowledge and action; it is a guide to day-by-day activity and provides a template against which changes can be calculated, new ideas and perspectives considered, contingencies accommodated and a strategic overview created. Effective planning is crucial in a sport like track and field, and in particular the running events, where an athlete's progression and capacity for performance is largely dependent on regulating and monitoring intensity and volume and other features of work necessary to adapt specific energy systems and neuromuscular pathways (Noakes, 2003). Although the "pure" or theoretical principles of planning a runner's training have been studied and explained well by a number of sports scientists (e.g., Bompa, 1994; Daniels, 2005; Grasso, 2006), what actually gets done in training is often different from what was planned. In this regard, it is vital that coaches have an accurate record of the work their athletes have completed to know the exact workloads that are contributing to their results.

Objective

The purpose of this project is to record and analyse a group of world-class sprinters' training based in Edmonton at the Canadian Athletics Coaching Centre. These results will provide their coach, and co-investigator, Kevin Tyler, with a detailed breakdown of his athletes' responses to training that will undoubtedly assist him in planning future workouts and competition schedules.

Design

Descriptive analysis of training data and competition results.

Setting

University of Alberta, Edmonton.

Subjects

Three world-class short sprinters (100m, 2 men, 1 woman) and three world-class long sprinters (400m, 2 men and 1 woman), all of whom were coached by the co-investigator were the particpants in this study.

Intervention/Main Outcome Measures

This project involved detailed data input to record the workouts completed by a group of world-class sprinters training in Edmonton. An Excel spreadsheet was used to calculate percentages of work done, including measures of volume and intensity. Importantly, data was recorded specific to the energy systems being trained, thus providing an exact breakdown of each athlete's workloads.

Main Results

Volumes of weekly training data were compiled and plotted, resulting in the observation of a number of important facts. During the preperation period the short sprinters (100m) performed upwards of 360m of maximal speed work across 3 speed sessions/week. Correlations indicate that maximal speed work exceeding 300m/week over 3 sessions caused a reduction in training capability. Approximately 180m of weekly sprinting across 1-2 sessions appears to be all that can be maintained. In the competitive

period an excess of 200m of maximal speed work lent itself to poor performances. The longer sprinters (400m) ran upwards of 1700m of weekly special endurance work— their primary sprint training modality. However, training in excess of 1000m/week lead to a breakdown in training, as did 3 weekly sprint sessions. Approximately 800m of special endurance volume was a maintainable load. A sufficient volume of special endurance training over a number of weeks (greater than 4) leading into a competition also led to better performances. A lack of this work immediately preceding competition correlated with slower performances.

Conclusions

The short sprinters can maintain an approximate average of 180-200m of maximal speed work during the preparation period and approximately 120m of this training appears to work during the competitive period. The longer sprinters can maintain approximately 800m of special endurance work and should maintain this at a lower level during the competitive period. We conclude that exceeding these volumes or 2 weekly sprint sessions can result in an injury or a reduction in training load for a number of weeks.

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Commentary

Research on planning and periodization is often conducted with average population samples and tends not to be very long term. This project was intended to provide the co-investigator with some specific result to enhance his effectivness as a coach. Accordingly, the deelopment of the spreadsheet for this project and the subsequent results will enable coach Tyler to complete a more informed analysis of his athletes' responses to specific types of training, enabling him to be more effective at planning future workouts and determining the association between workloads and results. A further benefit of accumulating such specific training data is a greater likelihood of reducing overtraining and avoiding injuries. Moreover, with these results both investigators will bne in a strong position to advance the educational aims of the Canadian Athletics Coaching Centre through presentations and publications that provide evidence-based accounts of the relationship between the Centre's athletes' training and their results. In this way, this project has both performance and educational outcomes that should not only benefit athletes and coaches in Alberta but across the world.
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