

SPECIAL SPEED-STRENGTH TESTING BEFORE AND AFTER A COMPETITIVE TRAINING RACE TO OPTIMIZE THE TRAINING DESIGN OF A MOTORCYCLING RACER

Ribera-Nebot, D (1) - Reverter-Masia, J (2)

(1) Barcelona University - (2) Zaragoza University

Introduction. Dynamic complex systems theories will provide us the basis to construct a specific training science for varied-actions and interaction sports (Seirul-lo Vargas, 1987). The methods for training monitoring, have to be chosen specifically for the event and the athlete's characteristics, and the information obtained from measurements has to be understandable for making effective changes in training design (Viru et. al. 2004). A proposal is to develop a strength training methodology with four levels (general, directed, special and competitive) that permit to gradually approach the strength capacity to the conditions of the specific technical actions in competition. Data from specific tests allow the design of personal needs for strength development and individual proportions in each level of strength approximation during each period of training (Seirul-lo Vargas, 1990).

Objective. The aim of this study was to evaluate the effect of a competitive training race on special speed-strength capacities three month before the competition in order to make effective changes in the training design.

Subject. One experienced motorcycling racer, aged 35, training for the 24 Hours International Motorcycling (Catalunya Circuit).

Methods. Five special speed-strength tests were performed 60-minutes before and 5-minuts after a 44-minutes competitive training race. Special speed-strength tests: 1) one-leg explosive vertical jump holding a stick with one hand –for right and left legs- (1LVJ); 2) two sets of 12 sec. –48 sec. rest in between- executing side-to-side push ups on the motorcycle (2x12-sec PU); 3) two sets of 15 sec. –45 sec. rest in between-executing jumps shifting from side to side on the motorcycle (2x15-sec SHIFT); 4) two sets of 30 sec (second set with 2,5 kg on the shoulders) –30 sec. rest in between- executing straight push ups on the motorcycle (2x30 sec PU); 5) two sets of 45 sec. (second set with 7,5 kg on the hip) –60 sec. rest in between- executing jumps shifting from side to side on the motorcycle (2x45-sec SHIFT).

Results. There are significant performance differences between the results before and after the competitive training race in: 1) Right Leg-1LVJ (right leg: 30 before – 21 after, left leg: 36 before – 37 after), demonstrating a reduced explosive capacity of the right leg; 2) 2x12-sec PU (before: 40, after: 32) and 4) 2x30 sec PU (before: 57, after: 45), showing a decrease in the push up speed-strength capacity of the arms. No significant performance differences exist between the results before and after the competitive training race in: 3) 2x15-sec SHIFT (before: 44, after: 40) and 5) 2x45-sec SHIFT (before:101, after: 96).

Changes in the training plan: a) to increase the explosive conditions of the right leg in the training of special-competitive strength for shifting from side to side; b) to increase the training proportion of directed strength to brake during the next month, c) to increase the rest time in between training sets of special strength to brake and to perform effort sets from 15 to 30 sec. until fatigue, d) to maintain the proportions of the four levels of strength for acceleration.

Conclusions. Special speed-strength tests performed before and after a competitive training race provides significant information to optimize the training periodization of a motorcycling racer. This method for training monitoring is specially useful in periods close to competition when the limits between precise peaking and prevention of overtraining are highly relevant.

References.

Seirul-lo Vargas, F. (1987). Selected topics on sport training. *Unpublished class notes*. Institute of Physical Education, Barcelona University.

Seirul-lo Vargas, F. (1990). Entrenamiento de la fuerza en balonmano. *Revista de Entrenamiento Deportivo*, 6 (4). "Strength training in handball". <http://www.entrenamientodeportivo.org>

Viru, A., Viru, M. and Volver A (2004). Training Monitoring. *7th International Sports Science Conferenc, Vilnius*. <http://www.sportbiochemistry.com>

Keywords: Motorcycling Racer / Special Speed-Strength Testing / Training Design

Acknowledgements: **Paco Martínez Martos**, excellent motorcyclist and sportsman.