# VELOCIDAD CRÍTICA Y RPE PARA EL CONTROL DEL ENTRENAMIENTO AERÓBICO

# AEROBIC TRAINING CONTROL BY CRITICAL VELOCITY AND RPE

**Ignacio Mínguez[1], Adrián Díez[1], César Berzosa[1], Héctor Gutiérrez[1], Ana Vanessa Bataller[1], Noel Marcén[1], Luis Alberto Marco[1], Eduardo Piedrafita[1]**

[1]Universidad San Jorge, Villanueva de Gállego (Zaragoza), España. E-mail: hgutierrez@usj.es.

## RESUMEN

En el presente estudio se pretende comprobar la eficacia del modelo de Velocidad Crítica (VC) y de la percepción subjetiva de esfuerzo (RPE) para el control del entrenamiento de la Velocidad Aeróbica Máxima (VAM) en carrera evaluada a través de un test máximo de 1000m (V1000). Participaron en este estudio 7 estudiantes del Grado de Ciencias de la Actividad Física y el Deporte de la Universidad San Jorge con un nivel de actividad física habitual moderado. Los programas de entrenamiento que se llevaron a cabo para la mejora de la VAM de carrera tuvieron una duración de 8 semanas con una frecuencia de entrenamiento de dos sesiones semanales, un volumen total de 41.600m e intensidades comprendidas entre el 80% y 120% de la V1000. El 100% de los participantes mejoró la V1000 tras las 8 semanas de entrenamiento. Se observó una mejora estadísticamente significativa del 13,63% (SD=3,19) en T2 respecto al tiempo de la V1000 en T1. No se encuentra ninguna asociación estadísticamente significativa entre la RPE (en cualquiera de los momentos en que fue registrada) y la mejora observada en la V1000.

**PALABRAS CLAVE:** educación, deporte escolar, fútbol base, fair play, valores.

## ABSTRACT

The present study aims to verify the efficacy of the Critical Speed (VC) model and the subjective perception of effort (RPE) for the control of the Maximum Aerobic Speed (VAM) training in runners. Seven students of the Physical Activity and Sports Sciences Degree of San Jorge University (Spain) with a moderate level of habitual physical activity participated in this study. The training programs that were carried out to improve VAM lasted 8 weeks with a training frequency of two weekly sessions, a total volume of 41,600m and intensities comprised between 80% and 120% of the V1000. The mean of V1000 in T1 was 257.68m/s (SD = 43.04) and 221.81m/s (SD = 32.44) in T2. 100% of the participants improved the V1000 after 8 weeks of training. A statistically significant improvement of 13.63% (SD = 3.19) was observed in T2 with respect to T1. No statistically significant association was found between the RPE (at any time it was recorded) and the improvement observed in the V1000.

**KEYWORDS:** education, youth sport, fair play, sport values.

## 1. INTRODUCTION

The present study aims to verify the efficacy of the Critical Speed (VC)[1] model and the subjective perception of effort (RPE) for the control of the Maximum Aerobic Speed (VAM)[2] training in runners.

## 2. METHOD

Seven students of the Physical Activity and Sports Sciences Degree of San Jorge University (Spain) with a moderate level of habitual physical activity participated in this study. For the assessment of this research, the following instruments were used: 1) GPS to establish the individualized VC model from the 3-minute all out test (T3MIN); 2) Wireless photocells to set the average speed in a maximum test of 1000m (V1000); 3) A Likert-type subjective scale from 0 (totally rested) to 10 (totally exhausted) for the evaluation of the RPE; and 4) an injury registry based on the Munich consensus. The training programs that were carried out to improve VAM lasted 8 weeks with a training frequency of two weekly sessions, a total volume of 41,600m and intensities comprised between 80% and 120% of the V1000. The study had two moments of evaluation for the V1000 and the VC (T1 and T2) separated 8 weeks between each other for. The RPE was recorded during all training days upon waking up ($RPE_0$), before training ($RPE_{ini}$), at the end of the training ($RPE_{post}$) and 30min after each training ($RPE30_{post}$). For the statistical analysis, it has been performed: 1) a descriptive study of the data obtained through the mean and standard deviation of the V1000 in T1 and T2; 2) comparison of means of the V1000 with the Wilcoxon W test; and 3) Association of the RPE with the VC and the V1000 with the Rho of Spearman.

## 3. RESULTS

Participants performed 78.57% of the scheduled sessions. The mean of V1000 in T1 was 257.68m/s (SD = 43.04) and 221.81m/s (SD = 32.44) in T2. 100% of the

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[1] BERTHON P, FELLMANN N, BEDU M, BEAUNE B, DABONNEVILLE M, COUDERT J, ET AL. A 5-min running field test as a measurement of maximal aerobic velocity. En: *European Journal of Applied Physiology and Occupational Physiology*. 1997; volumen 75, no 3, pp: 233-8.

[2] PETTITT RW. Applying the Critical Speed Concept to Racing Strategy and Interval Training Prescription. En*: International Journal of Sports Physiology and Performance*. 2016; volumen 11, no 7, pp 842-7.

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participants improved the V1000 after 8 weeks of training. A statistically significant improvement of 13.63% (SD = 3.19) was observed in T2 with respect to T1. No statistically significant association was found between the RPE (at any time it was recorded) and the improvement observed in the V1000. Only one muscle injury was observed throughout the training process related to the sport activity of the participant outside of this study.

## 4. CONCLUSIONS

The VC model seems effective for the control of a training program designed for the improvement of the V1000 in runners. For its part, and although it does not seem to be associated with performance improvements, RPE can be useful for the prevention of injuries in VAM training.

## REFERENCES

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