



ORIGINAL ARTICLE

Do elite athletes sleep well? ☆, ☆☆

Carla Estivill-Domènech^{a,*}, Beatriz Galilea^b, Beatriz Rodríguez-Morilla^c,
Ignasi de Yzaguirre^d, Eduard Estivill^e, Elena López^f, Maria Antonia Zamora^g,
Juan Antonio Madrid^c, Francisco Segarra^e

^a Fundació Estivill-Sueño, c/Rosales n° 9, 08017 Barcelona, Spain

^b Dept. Psicologia, Centre de Medicina de l'Esport, Consell Català de l'Esport, Generalitat de Catalunya, Av. Països catalans 12, 08950 Esplugas, Spain

^c Instituto de Investigación Biosanitaria Virgen de la Arrixaca (IMIB), Campus Ciencias de la Salud, 30120 El Palmar, Murcia, Spain

^d Dept. Medicina de l'Esport, Centre de Medicina de l'Esport, Consell Català de l'Esport, Generalitat de Catalunya, Av. Països catalans 12, 08950 Esplugas, Spain

^e Clínica del Sueño Estivill, Hospital Quirón-Dexeus, c/Rosales n° 9, 08017 Barcelona, Spain

^f Servei de Tutoria, Residencia Blume, Consell Català de l'Esport, Generalitat de Catalunya, Av. Països catalans 12, 08950 Esplugas, Spain

^g Dept. Infermeria, Centre de Medicina de l'Esport, Consell Català de l'Esport, Generalitat de Catalunya, Av. Països catalans 12, 08950 Esplugas, Spain

Received 20 September 2017; accepted 16 October 2017

KEYWORDS

Sleep;
Sports performance;
Fatigue;
Sleepiness;
Circadian rhythms;
Invisible training

Abstract

Introduction: The objective of the study was to evaluate sleep, circadian rhythms and neurocognitive status of high performance athletes during the usual period of training, competitions and studies.

Materials and methods: A team of 12 high-performance basketball players (women, 15–17 years old) concentrated in a sports residence was evaluated. Sleep was studied through polysomnography, circadian rhythms using ambulatory circadian monitoring sensors, and neurocognitive status using a battery of questionnaires.

Results: Athletes sleep $6:57 \pm 0.02$ h, nocturnal activity of $201.1 \pm 33.7\%$ is above normal range (65–135%), regularity of schedules, $72.6 \pm 9.2\%$ is also out of range (75–125%). The sleep depth of $85.1 \pm 2.6\%$ (normal values between 85 and 100%) is reduced, and the peripheral temperature during the day, of $33.4 \pm 0.9^\circ\text{C}$ (normal values between 31 and 33°C) indicates drowsiness.

☆ Work supported by the Consell Català de l'Esport, de la Generalitat de Catalunya (PRE/1278/2015).

☆☆ Work presented at the 24th annual meeting of the Spanish Society of Sleep (Valladolid. March 31st–April 2nd, 2016).

* Corresponding author.

E-mail address: carla@doctorestivill.es (C. Estivill-Domènech).

<https://doi.org/10.1016/j.apunts.2017.10.002>

1886-6581/© 2017 FC Barcelona. Published by Elsevier España, S.L.U. All rights reserved.

Please cite this article in press as: Estivill-Domènech C, et al. Do elite athletes sleep well? Apunts Med Esport. 2017.
<https://doi.org/10.1016/j.apunts.2017.10.002>

PALABRAS CLAVE

Sueño;
Rendimiento
deportivo;
Fatiga;
Somnolencia;
Ritmos circadianos;
Entrenamiento
invisible

Conclusions: Our sample of athletes sleep less than the necessary hours, their sleep quality is low due to muscle fatigue and poor habits, and their irregular schedule deteriorates the circadian system. All of this influences both physical and mental performance. It is essential to raise awareness of the importance of improving these sleep habits in order to maintain optimum physical performance.

© 2017 FC Barcelona. Published by Elsevier España, S.L.U. All rights reserved.

¿Duermen bien los deportistas de élite?

Resumen

Introducción: El objetivo del estudio fue evaluar el sueño, ritmos circadianos y estado neurocognitivo de deportistas de alto rendimiento durante el periodo habitual de entrenamiento, competiciones y estudios.

Materiales y métodos: Se evaluó un equipo de 12 jugadoras (mujeres, 15-17 años) de baloncesto de alto rendimiento, concentrado en una residencia de deportistas. Se estudió el sueño mediante polisomnografía, los ritmos circadianos mediante sensores de monitorización circadiana ambulatoria, y el estado neurocognitivo mediante batería de cuestionarios.

Resultados: Las deportistas duermen $6:57 \pm 0,02$ h, la actividad nocturna del $201,1 \pm 33,7\%$ se sitúa por encima de la normalidad (65-135%), la regularidad de horarios, de un $72,6 \pm 9,2\%$ también está fuera de rango normal (75-125%). La profundidad de sueño del $85,1 \pm 2,6\%$ (valores normales entre 85-100%) es reducida, y la temperatura periférica elevada durante el día, de $33,4 \pm 0,9$ °C (valores normales entre 31-33 °C) indica somnolencia.

Conclusiones: Las deportistas de nuestro estudio duermen menos horas de las necesarias, la calidad del sueño es baja debido a la fatiga muscular y a unos malos hábitos, y los horarios irregulares deterioran el sistema circadiano. Todo esto influye en su rendimiento tanto físico como mental. Es básico concienciar al colectivo con todos los estamentos implicados, de la importancia de mejorar estos hábitos de sueño para mantener el rendimiento físico óptimo.

© 2017 FC Barcelona. Publicado por Elsevier España, S.L.U. Todos los derechos reservados.

Introduction

Scientific evidence proves that one of the main factors which influence sport performance is the quality and quantity of the hours during which sportsmen and sportswomen sleep.¹

Sports development and performance are chiefly based on training, although other "invisible training" factors also play an important role. These include physical recovery, psychological preparation, nutrition and also rest. Correct sleep plays a highly important role in athletic performance and in physical, physiological and metabolic recovery, while it also ensures good cognitive condition and mood.

However, the discipline of those who do sports also leads to a reduction in their hours of sleep, problems with the quality of their rests and deterioration of their circadian rhythms.²⁻⁶ The hours of training, competitions and the stress and anxiety they cause, the high degree of physical wear and over-training all affect their rest. This wear and the poor quality of their sleep prevent the necessary physical repair from occurring, affecting physical and mental recovery.

Numerous studies have been published on how lack of rest affects physical recovery and performance. Skein et al.⁷ associate lack of sleep with a fall in the levels of muscular glycogen, and as a result of this with poorer performance

in athletic competitions; VanHelder et al.⁸ emphasise the relationship between sleep loss with an increased metabolic demand and higher energy consumption. Likewise, recovery becomes less effective due to the increase in energy consumption and metabolic demand.^{9,10} Finally, lack of sleep has also been identified as the most important factor in the risk of suffering injuries, increasing the risk of injury 1.7 times, according to a study of 160 adolescent athletes.¹¹

Circadian rhythms are genetically determined by the nature of each individual, and they will influence variations in performance throughout the day.¹² It is very important to preserve the rhythm to conserve homeostatic balance, which is directly associated with mental and physical functions, cardiovascular working, core temperature or the metabolism. Training times should be tailored to the chronotype of each sportsman or sportswoman.

The influence of lack of rest is no less important in terms of mood and cognitive state. The perception of fatigue, resistance against stress, working capacity, reaction time and concentration are all affected by a lack of sleep.¹³

A work directly connected with this study was published by Mah et al.¹⁴ This studies the effect of length of sleep on the performance of a team of basketball players in Stanford University. The average length of sleep at first was 7 h 45 min, and this was extended to 9 h 15 min, after which

Download English Version:

<https://daneshyari.com/en/article/8607886>

Download Persian Version:

<https://daneshyari.com/article/8607886>

[Daneshyari.com](https://daneshyari.com)