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# The use of Whole-body Cryostimulation to improve the quality of sleep in athletes during high level standard competitions

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## INTRODUCTION

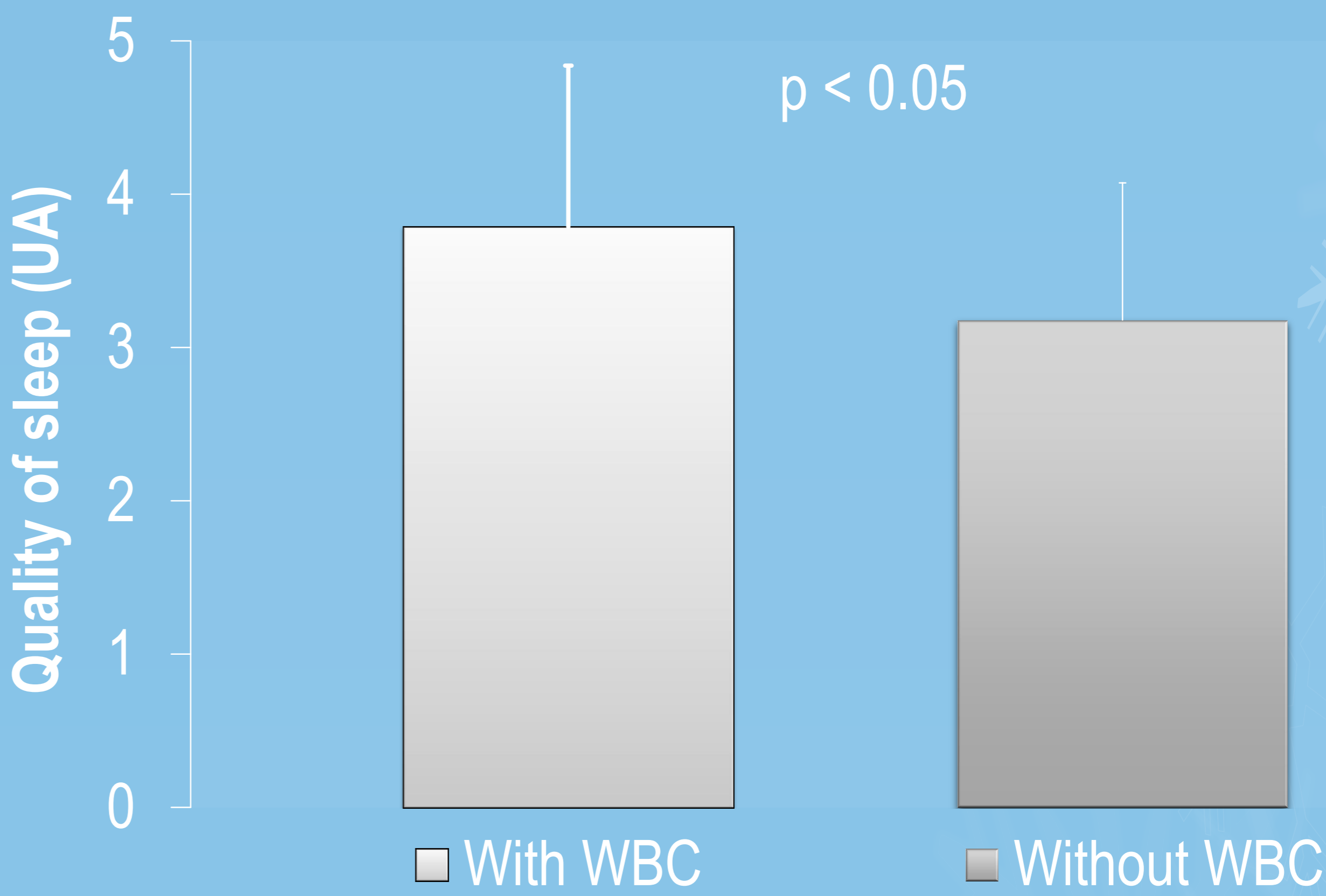
Recovery phase is considered as a key phase of the training process, especially with the Quality of Sleep (QS) (1). The whole-body cryostimulation (WBC) is a new attractive recovery method (2). High-level athletes usually experience mood changes and sleep disturbances, especially during high standard competitions or overreaching training periods. **The present study was undertaken to examine whether QS is affected during the night following the WBC exposure in male and female high-level athletes during competitions.**

## METHODS

This field study occurred during one-week training camp with three international matches before the 2013 European Basketball championship for the men's and women's basketball French Teams. Twenty seven basketball players participated in the study. They were exposed during 3-min at -130°C once a day and wore underwear, gloves, socks and slippers. Variable explored was the perception of the QS using a perceptive scale adapted from Spiegel's questionnaire (3) and ranged from 1 to 5. Subjects answered the question "Did you sleep well?" with the following possible answers: "1 - No, really not well" "2 – No"; "3 – Moderately well"; "4 – Yes, well"; "5 – Yes, perfectly". The possible differences in the QS in function of the previous WBC exposure was analysed using a Wilcoxon test.

## RESULTS

Athletes reported better sleep the night following WBC compared to the night without (score of  $3.7 \pm 0.7$  versus  $3.2 \pm 0.9$  respectively,  $p < 0.05$ ). QS was improved by 15% with WBC.



Perception of the QS in 27 high level athletes in fonction of a WBC exposure or not the previous day (2 nights per condition)

		Age	Height (cm)	Weight (kg)	Body Mass Index
Age	All	25.8 ± 3.5	192.5 ± 11.8	88.5 ± 15.7	23.5 ± 2.2
	Males	24.2 ± 2.6	200.2 ± 4.3	96.0 ± 9.1	23.9 ± 1.5
	Females	27.0 ± 3.1	183.1 ± 9.5	78.1 ± 12.4	23.2 ± 2.5

Characteristics of the subjects

## DISCUSSION

**The main finding of this study was the enhancement by 15% of the QS with WBC use.** This result could be explained by the effects on mood states and relaxation induced by the WBC

exposure (4). The improvement of the QS during both competition and heavy training load periods appears of importance to enhance athletes' recovery. Such

situation may lead to 1) a decrease of the injury risks, 2) a better standing of the training load and 3) less fatigue before the matches.

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