THE INFLUENCE OF ETHNIC BACKGROUND ON ALTITUDE-INDUCED CENTRAL SLEEP APNEA

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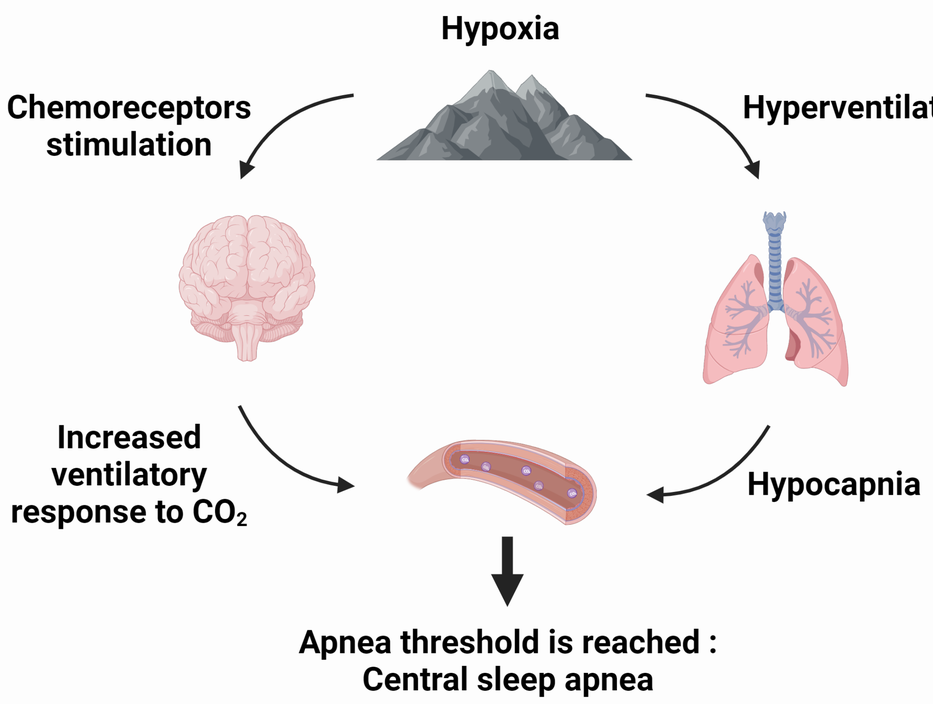
At high altitude, **individuals without respiratory disorders** at lower altitudes tend to develop central sleep apnea (CSA)



The altitude of onset and the severity of CSA vary among individuals and **may be attributed to genetic differences in respiratory control during sleep**

THE TIBETANS HAVE LIVED IN THE HIGH-ALTITUDE FOR GENERATIONS

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THEIR GENOTYPE HAS ADAPTADED TO HYPOXIA

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THIS GIVE THEM REMARKABLE TOLERANCE TO HYPOXIA

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THESE PROPERTIES ARE PRESENT EVEN IN TIBETANS WHO NO LONGER LIVE AT HIGH-ALTITUDE

QUESTION :

Are there disparities in the propensity to develop high-altitude-induced CSA between unacclimated Caucasian and Tibetan subjects living in Switzerland ?

METHODS :

20 CAUCASIANS

ALL MALE
AGE : 25 [23.5-26] vs 28 [27-32]
BMI : 22.1 [21.2-23.1] vs 23.8 [23.1-28]
ALL THE SUBJECTS LIVE IN SWITZERLAND

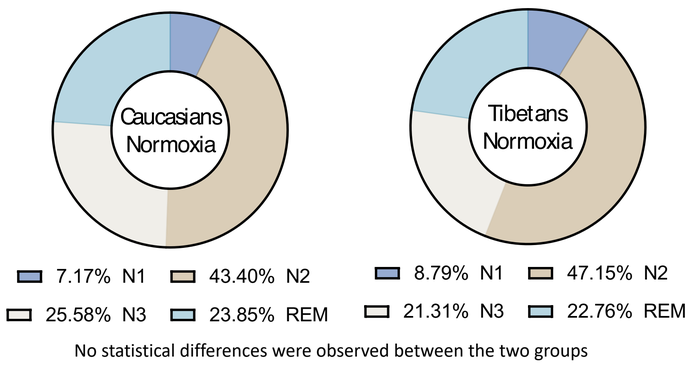
9 TIBETANS

TWO COMPLETE POLYSOMNOGRAPHIC RECORDINGS :

AT HOME // HYPOXIC CHAMBER (FiO_2: 13 % - 3500M)

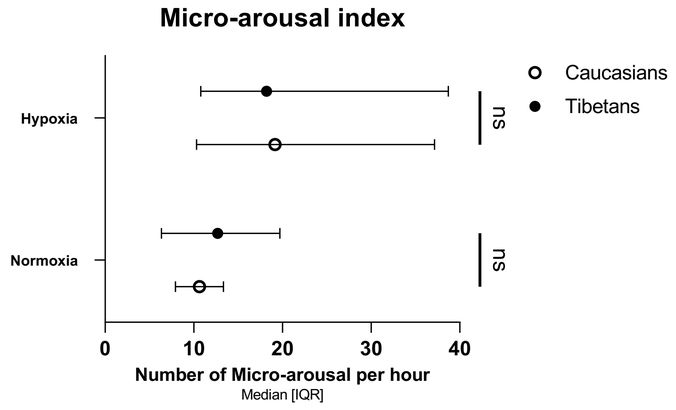
RESULTS WERE COMPARED BETWEEN BOTH GROUPS USING NON-PARAMETRIC TESTS

Proportion of total sleep time spent in each sleep stage (%)



No statistical differences were observed between the two groups

Micro-arousal index



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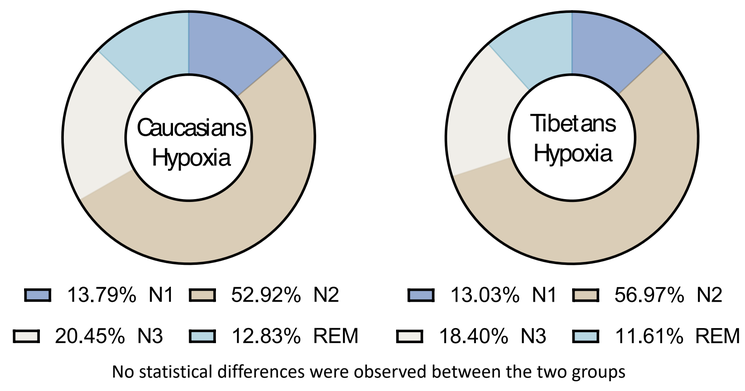
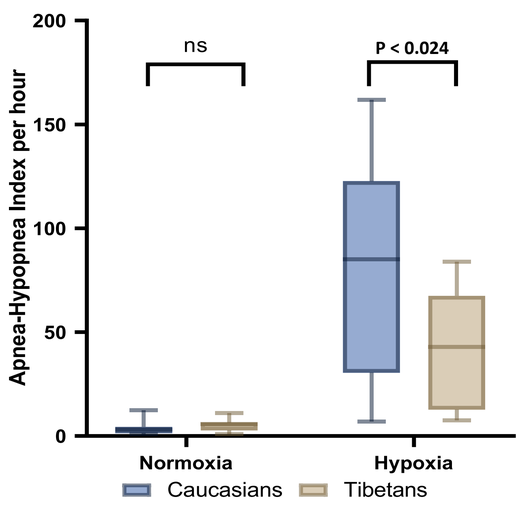


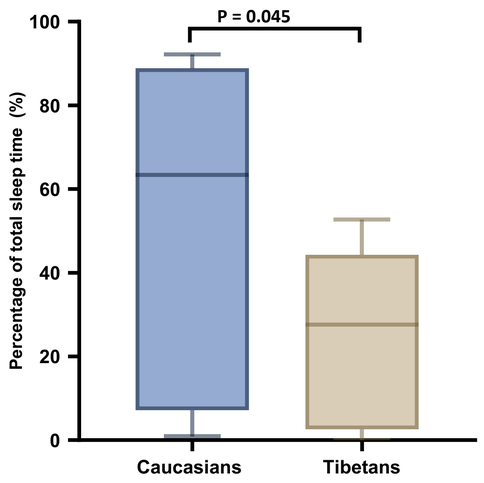
No statistical differences were observed between the two groups

ALTOUGH NO DIFFERENCE WAS OBSERVED IN SLEEP STRUCTURE, THE TWO GROUPS DEVELOPED DIFFERENT RESPIRATORY PATTERNS IN HYPOXIC CONDITION :

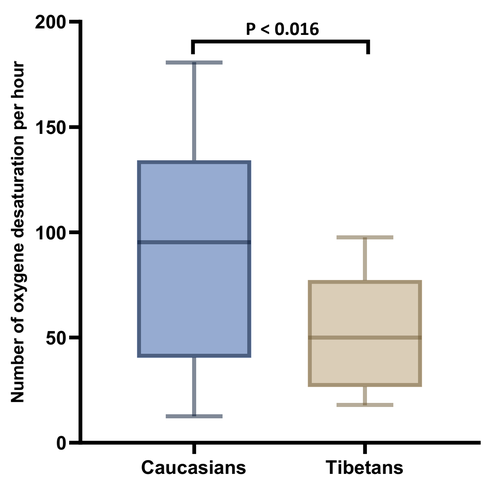
Apnea-Hypopnea Index per hour for each recording



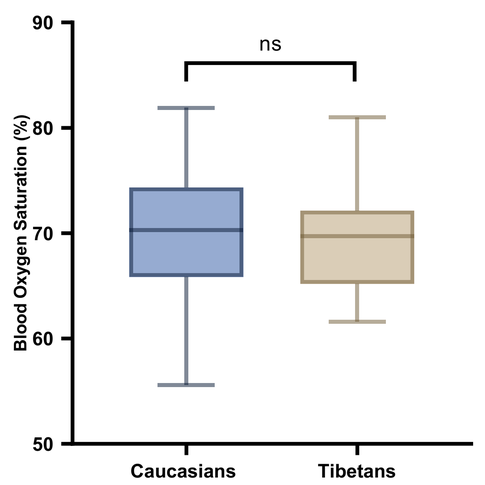
Percentage of sleep spent in periodic breathing in hypoxic condition



Difference between hypoxic and normoxic conditions in the oxygen desaturation index



Mean blood oxygen saturation during the night in hypoxia



AMONG CAUCASIANS AND TIBETANS LIVING AT LOW-ALTITUDE :

Tibetan subjects demonstrated a reduced propensity to develop CSA during sleep in hypoxia.

THIS SUGGESTS THAT A GENETIC ADAPTATION TO HYPOXIA MAY CONFER PROTECTION AGAINST ALTITUDE-INDUCED CSA IN TIBETANS