



The ARRIVE guidelines 2.0: author checklist

The ARRIVE Essential 10

These items are the basic minimum to include in a manuscript. Without this information, readers and reviewers cannot assess the reliability of the findings.

Item	Recommendation	Section/line number, or reason for not reporting
Study design	1 For each experiment, provide brief details of study design including: - The groups being compared, including control groups. If no control group has been used, the rationale should be stated. - The experimental unit (e.g. a single animal, litter, or cage of animals).	Sec. 2.1: three groups - NN (normoxic control), HH (hypobaric hypoxia), and HO (hypobaric hypoxia + oxygen enrichment). Sec. 2.1: experimental unit not explicitly stated; appears to be the individual rat.
Sample size	2 - Specify the exact number of experimental units allocated to each group, and the total number in each experiment. Also indicate the total number of animals used. - Explain how the sample size was decided. Provide details of any <i>a priori</i> sample size calculation, if done.	Sec. 2.1: 18 rats total; n=6/group. Subsets were used for some assays (Fig. 2 n=3; Fig. 5 A-C n=6, D-K n=3; RNA-seq Sec. 2.7 n=3/group). Sec. 2.1: sample size based on prior laboratory studies; no <i>a priori</i> sample-size/power calculation reported.
Inclusion and exclusion criteria	3 - Describe any criteria used for including and excluding animals (or experimental units) during the experiment, and data points during the analysis. Specify if these criteria were established <i>a priori</i>. If no criteria were set, state this explicitly. - For each experimental group, report any animals, experimental units or data points not included in the analysis and explain why. If there were no exclusions, state so. - For each analysis, report the exact value of <i>n</i> in each experimental group.	Not reported. No <i>a priori</i> inclusion/exclusion criteria for animals or data points are described. Sec. 2.12: no animals were excluded from the analysis. Figs. 1.3: n=6; Fig. 2: n=3; Fig. 5 A-C: n=6, D-K: n=3. RNA-seq Sec. 2.7 =3/group, but Fig. 4 legend states n=6 (inconsistent).
Randomisation	4 - State whether randomisation was used to allocate experimental units to control and treatment groups. If done, provide the method used to generate the randomisation sequence. - Describe the strategy used to minimise potential confounders such as the order of treatments and measurements, or animal/cage location. If confounders were not controlled, state this explicitly.	Sec. 2.1: rats were randomized; randomization sequence-generation method not reported. Not reported: no strategy for controlling treatment/measurement order or cage/location confounders is described.
Blinding	5 Describe who was aware of the group allocation at the different stages of the experiment (during the allocation, the conduct of the experiment, the outcome assessment, and the data analysis).	Secs. 2.3, 2.4, 2.10, 2.11: blinded outcome assessment/data analysis. Blinding during allocation and intervention conduct not reported.
Outcome measures	6 - Clearly define all outcome measures assessed (e.g. cell death, molecular markers, or behavioural changes). - For hypothesis-testing studies, specify the primary outcome measure, i.e. the outcome measure that was used to determine the sample size.	Secs. 2.3-2.11: MWM behavior, histology/apoptosis, superoxide/redox markers, RNA-seq/qPCR, phospholipids, TEM, and protein expression were assessed. Not reported: no primary outcome used to determine sample size is specified.
Statistical methods	7 - Provide details of the statistical methods used for each analysis, including software used. - Describe any methods used to assess whether the data met the assumptions of the statistical approach, and what was done if the assumptions were not met.	Sec. 2.12: GraphPad Prism 9.4; one-way ANOVA with Bonferroni post hoc tests. A repeated-measures approach for the 5-day MWM acquisition is not separately described. Sec. 2.12: Kolmogorov-Smirnov and Levene tests; all data reportedly satisfied normality and homogeneity assumptions.
Experimental animals	8 - Provide species-appropriate details of the animals used, including species, strain and substrain, sex, age or developmental stage, and, if relevant, weight. - Provide further relevant information on the provenance of animals, health/immune status, genetic modification status, genotype, and any previous procedures.	Sec. 2.1: male Sprague-Dawley rats, 7 weeks old; weight and substrain not reported. Sec. 2.1: animals sourced from the Animal Center of the Air Force Military Medical University; health/immune status, genotype/genetic modification, and previous procedures not reported.
Experimental procedures	9 For each experimental group, including controls, describe the procedures in enough detail to allow others to replicate them, including: - What was done, how it was done and what was used. - When and how often. - Where (including detail of any acclimatisation periods). - Why (provide rationale for procedures).	Secs. 2.1-2.11 describe major procedures and materials; some assays rely on commercial-kit/manufacture protocols rather than full procedural detail. Secs. 2.1-2.3: hypoxia 3 days; HO oxygen 12 h/day (08:00-20:00); MWM 5-day acquisition, 4 trials/day, probe Day 9. Timing/frequency of some downstream assays is not fully specified. Secs. 2.1, 2.3: housing/exposure settings and MWM normobaric normoxic conditions reported; acclimatisation period not reported. Introduction and Secs. 2.1, 2.3: rationale for the hypoxia model, oxygen enrichment, and MWM is provided; rationale for some downstream assays is not explicit.
Results	10 For each experiment conducted, including independent replications, report: - Summary/descriptive statistics for each experimental group, with a measure of variability where applicable (e.g. mean and SD, or median and range). - If applicable, the effect size with a confidence interval.	Results/Figs. 1-5: data generally presented as mean $\pm$ SEM with <i>n</i> in legends; Fig. 4 <i>n</i> conflicts with Sec. 2.7 as noted under Item 3c. Not reported: effect sizes with confidence intervals are not provided.