NOTE: Please save this file locally before filling in the table, DO NOT work on the file within your internet browser as changes will not be saved. Adobe Acrobat Reader (available free here) is recommended for completion.

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: a. The groups being compared, including control groups. If no control group has been used, the rationale should be stated. b. The experimental unit (e.g. a single animal, litter, or cage of animals).	Section 2.2 (Experimental Design); groups compared: C57BL/10, mdx, DBA/2, D2.DMD Individual mice. Rationale for severe vs. mild models explained in 3. Results.
Sample size	2	a. 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. b. Explain how the sample size was decided. Provide details of any *a priori* sample size calculation, if done.	Section 2.2 (n = 10 per group for functional tests and CK); Section 2.12 (n = 5 per group for histology/morphometry/mitochondria; n = 4 for 4-HNE; n = 4–5 for calpain; n = 3 for TEM).40 animals in total Section 2.12. Sample size was not determined by formal power calculation. Group sizes (n = 10 per group for functional tests and CK; n = 3–5 for other assays) were chosen based on previous similar studies
Inclusion and exclusion criteria	3	a. 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 *a priori.* If no criteria were set, state this explicitly. b. 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. c. For each analysis, report the exact value of *n* in each experimental group.	Section 2.12: No samples were excluded from the analysis. All animals/data included in 3. Results. Exact n reported per experiment (Fig. 1-4, Tables 1-6). Section 3 (Results)
Randomisation	4	a. 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. b. 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.	Section 2.12: Animals were allocated to experimental groups based on genotype/line; no randomisation was used for group allocation. Within each group, animals were randomly assigned to analytical subgroups using a random number table, with stratification by baseline body weight (±2 g). Sections 2.5 and 2.6: Image analysis was performed blindly. Investigators performing mitochondrial respiration and calcium assays were aware of group allocation; histological image analysis was performed blindly.
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).	Section 2.5, 2.6, 2.12: Due to visible phenotypic differences between dystrophic and control mice, complete blinding was not feasible. However automated equipment (Oxygraph Plus, grip test apparatus) minimized subjective bias. Histological and TEM samples were analyzed with randomized slide order. Investigators
Outcome measures	6	a. Clearly define all outcome measures assessed (e.g. cell death, molecular markers, or behavioural changes). b. For hypothesis-testing studies, specify the primary outcome measure, i.e. the outcome measure that was used to determine the sample size.	Sections 2.3–2.11 (functional tests, histology, TEM, mitochondrial respiration, CRC, calcium overload, 4-HNE, calpain); primary outcome: mitochondrial respiratory function (RCR/State 3). No single primary outcome was used to determine the sample size. Sample size was not based on a formal power calculation; group sizes (n = 10 per group for functional tests and CK; n = 3–5 for other assays) were chosen based on previous similar studies
Statistical methods	7	a. Provide details of the statistical methods used for each analysis, including software used. b. 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.	Section 2.12: GraphPad Prism 10; Shapiro–Wilk test for normality; one-way ANOVA with Tukey's post-hoc test for normally distributed data; Kruskal–Wallis with Dunn's post-hoc for HAI; Spearman correlation separately for each genetic Shapiro–Wilk test for normality; ANOVA with Tukey's post-hoc for normally distributed data, Kruskal–Wallis with Dunn's post-hoc for non-normal data (HAI); Spearman correlation used, which does not assume normality
Experimental animals	8	a. Provide species-appropriate details of the animals used, including species, strain and substrain, sex, age or developmental stage, and, if relevant, weight. b. Provide further relevant information on the provenance of animals, health/immune status, genetic modification status, genotype, and any previous procedures.	Species: mouse (Mus musculus). Strains/substrains: C57BL/10ScSn (wild-type control), C57BL/10ScSn-Dmdmdx (mdx), DBA/2 (control for the D2 background), and D2.DMDdel8-34 (D2.DMD). Sex: male. Age: 8 weeks at euthanasia. Weight: not reported Provenance: C57BL/10ScSn and DBA/2 mice were obtained from the Shemyakin and Ovchinnikov Institute of Bioorganic Chemistry, RAS ("Bio-model", Pushchino, Russia); D2.DMDdel8-34 mice were
Experimental procedures	9	For each experimental group, including controls, describe the procedures in enough detail to allow others to replicate them, including: a. What was done, how it was done and what was used. b. When and how often. c. Where (including detail of any acclimatisation periods). d. Why (provide rationale for procedures).	Sections 2.3–2.11 All groups (n = 10/group): grip strength and wi Single time point (8 weeks of age): grip streng Standard vivarium conditions, 12-h light/dark cycle, water and food ad libitum (Section 2.1). Acclimatisation: animals were acclimatised for 2 weeks after arrival before the start of the experiment, and habituated to the testing
Results	10	For each experiment conducted, including independent replications, report: a. Summary/descriptive statistics for each experimental group, with a measure of variability where applicable (e.g. mean and SD, or median and range). b. If applicable, the effect size with a confidence interval.	Summary statistics for each experimental group are reported as mean ± SEM (Tables 1–3, Figures 1–4), except HAI, which is presented as median (min–max) (Table 1). Exact p-values are provided for all correlation analyses (Tables 4–6). Sections 3.1–3.4. Section 2.12: E