Materials Design Analysis Reporting (MDAR) Checklist for Authors

The MDAR framework establishes a minimum set of requirements in transparent reporting applicable to studies in the life sciences (see Statement of Task: doi:10.31222/osf.io/9sm4x.). The MDAR checklist is a tool for authors, editors and others seeking to adopt the MDAR framework for transparent reporting in manuscripts and other outputs. Please refer to the MDAR Elaboration Document for additional context for the MDAR framework.

Materials

Antibodies	Yes (indicate where	n/a
For commercial reagents, provide supplier name, catalogue number and RRID, if available.	left, type 3401; Sawbones, Vashon, WA	

Cell materials	Yes (indicate where	n/a
Cell lines: Provide species information, strain. Provide accession number in repository **OR** supplier name, catalog number, clone number, **OR** RRID		This article is a finite element analysis.
Primary cultures: Provide species, strain, sex of origin, genetic modification status.	N/A	This article is a finite element analysis.

Experimental animals	Yes (indicate where	n/a
Laboratory animals: Provide species, strain, sex, age, genetic modification status. Provide accession number in repository **OR** supplier name, catalog number, clone number, **OR** RRID		This article is a finite element analysis There are no laboratory animals.
Animal observed in or captured from the field: Provide species, sex and age where possible		This article is a finite element analysis There are no laboratory animals.
Model organisms: Provide Accession number in repository (where relevant)		This article is a finite element analysis There are no laboratory animals.

Plants and microbes	Yes (indicate where	n/a
Plants: provide species and strain, unique accession number if available, and source (including location for collected wild specimens)		This article is a finite element analysis There are no laboratory animals.
Microbes: provide species and strain, unique accession number if available, and source		This article is a finite element analysis There are no laboratory animals.

Human research participants	Yes (indicate where	n/a
Identify authority granting ethics approval (IRB or equivalent committee(s), provide reference number for approval.	N/A	This study did not involve laboratory animals. This study focuses on computer software analysis without ethical implications.
Provide statement confirming informed consent obtained from study participants.	N/A	This study did not involve laboratory animals. This study focuses on computer software analysis without ethical implications.
Report on age and sex for all study participants.	N/A	This study did not involve laboratory animals. This study focuses on computer software analysis without ethical implications.

Design

Study protocol	Yes (indicate where	n/a
For clinical trials, provide the trial registration number **OR** cite DOI in manuscript.		This study did not involve laboratory animals. This study focuses on computer software analysis without ethical implications.

Laboratory protocol	Yes (indicate where	n/a
Provide DOI or other citation details if detailed step-by-step protocols are available.		This study did not involve laboratory animals. This study focuses on computer software analysis.

Experimental study design (statistics details)	Yes (indicate where provided: section/paragraph)	n/a
State whether and how the following have been done**, or** if they were not carried out.		
Sample size determination	**Section 3**	
Randomisation		This study did not involve statistical analysis.
Blinding	Finite element analysis	
Inclusion/exclusion criteria		This study did not involve statistical analysis.

Sample definition and in-laboratory	Yes (indicate where	n/a
State number of times the experiment was replicated in laboratory	N/A	Computer simulations do not require a number of repetitions.
Define whether data describe technical or biological replicates	**Section 3 OF Materials and methods.**	

Ethics	Yes (indicate where provided: section/paragraph)	n/a
Studies involving human participants: State details of authority granting ethics approval (IRB or equivalent committee(s), provide reference number for approval.		This study is a finite element computer analysis and does not involve ethics.
Studies involving experimental animals: State details of authority granting ethics approval (IRB or equivalent committee(s), provide reference number for approval.		This study is a finite element computer analysis and does not involve ethics.
Studies involving specimen and field samples: State if relevant permits obtained, provide details of authority approving study; if none were required, explain why.		This study is a finite element computer analysis and does not involve ethics.

Dual Use Research of Concern (DURC)	Yes (indicate where provided: section/paragraph)	n/a
If study is subject to dual use research of concern, state the authority granting approval and reference number for the regulatory approval		This regulation is not involved.

Analysis

Attrition	Yes (indicate where provided:	n/a
State if sample or data point from the analysis is excluded, and whether the criteria for exclusion were determined and specified in advance.	Yes.	

Statistics	Yes (indicate where provided:	n/a
Describe statistical tests used and justify choice of tests.	2 SECTION OF Materials and methods	

Data Availability	Yes (indicate where provided:	n/a
State whether newly created datasets are available, including protocols for access or restriction on access.	2 SECTION OF Materials and methods	
If data are publicly available, provide accession number in repository or DOI or	N/A	none
If publicly available data are reused, provide accession number in repository or DOI or URL, where possible.	N/A	none

Code Availability	Yes (indicate where provided:	n/a
For all newly generated code and software essential for replicating the main findings of the study:		
State whether the code or software is available.	2.2 SECTION OF Materials and methods	
If code is publicly available, provide accession number in repository, or DOI or URL.		None

Reporting

Adherence to community standards	Yes (indicate where provided: section/paragraph)	n/a
MDAR framework recommends adoption of discipline-specific guidelines, established and endorsed through community initiatives. Journals have their own policy about requiring specific guidelines and recommendations to complement MDAR.		
State if relevant guidelines (eg., ICMJE, MIBBI, ARRIVE) have been followed, and whether a checklist (eg., CONSORT, PRISMA, ARRIVE) is provided with the manuscript.	ICMJE guidelines were followed as the journal follows ICMJE guidelines for publication.	

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