Point-by-point reply to Reviewer #1

Dear Dr. Le Meillour,

Please see our point-by-point replies to the comments submitted by Reviewer #1.

We thank you and the Reviewer for your careful and thorough editing and critiques, which have so significantly improved the manuscript.

Nimrod (on behalf of the authors)

The article's format has significantly improved, which is commendable. The discussion now presents stronger arguments compared to the previous version, offering a critical analysis of both the data and results, which is highly insightful. I'm pleased to see that most of my previous comments have been taken into account, and I extend my gratitude to the authors. Despite being preliminary, this work has the potential to pave the way for further research.

- **Specific Comments**:
  - *Line 27: Could you elaborate more on the conclusions?*

    This is a referenced introductory sentence that does not require, in our opinion, further elaboration in the discussion. The manuscript is stylistically condensed, and avoids long expositions of what we perceive to be accepted wisdom in the field, as long as we do not challenge its premises.

  - *Line 49: Consider using "Antiquity" instead of "antiquity."*

    Done.

  - *Line 128: It would be helpful to include a legend explaining the zone referred to in the table.*

    Accepted.

    We assume that the reviewer refers to Figure 1. We modified the caption, which now reads:

    “Figure 1. Location map for the sites mentioned in the text, with coastal sites in shades of blue. Base map TheDastanMR, CC0, via Wikimedia

Commons, made available under the Creative Commons CC0 1.0 Universal Public Domain Dedication".

Modified part in red.

- *Lines 140-141: The mention of "IA1/IA2" appears for the first time without explanation. It would be beneficial to standardize this throughout the text.*

  Accepted.

  The abbreviation "IA" is explicated in line 132 and a chronological description on first occurrence.

  "In the Iron Ages 1 and 2a (IA1–2a, 12th–9th centuries BCE), the site was a major urban center (Susnow et al., 2021). The study sample comes from a hoard of astragali found in jar dating to an IA2a (10th–9th centuries BCE) context (Susnow et al., 2021)."

- *Lines 205, 201, 301: Please ensure consistent spacing with double spaces.*

  The spaces are now consistent.

- *Digitization Error & GPA: I suggest rearranging the order of the paragraphs discussing digitization error and GPA. Since analyses Procrustes are already being discussed for error testing, this rearrangement would avoid repetition.*

  Accepted, the order of the paragraphs was switched.

- *Lines 276-278: Bibliographic references should be reserved for the discussion section. However, it's worth noting that the percentage of error is similar to other studies.*

  Declined.

  The section that treviewer refers to reads

255 **Results**

256 ***Digitization error.*** The mean Procrustes distance between re-digitized specimens was 0.034,
257 and among the full dataset, 0.118; the percent of digitization error is therefore estimated at
258 29.37%. This percent of digitization error is within the range observed in similar intraspecies
259 GMM studies (Harding, 2021, p. 59; Hulme-Beaman, 2014, pp. 164–167 and table 6.2).

  It comprises two references, both supporting concrete statements that we consider part of the results.

- *Line 411: This result seems new (unless I missed it previously). If so, it should be presented earlier. The paragraph discussing variability due to topography is particularly intriguing!*

  The result has been published in a peer-reviewed paper authored by SH, SV and NM (among others). Therefore we think that mentioning the results here with a reference (Harding et al. 2023) is sufficient as part of the discussion.

LTD (p=0.001), but not between Dor and Keisan. A previous study echoes this finding, which analyzed astragalar proportions of inland/rough terrain and coastal/flat terrain domestic sheep in the southern Levant using an astragalar dimension index (lateral depth/greatest lateral length; distal breadth/lateral depth) (Harding et al., 2023). The proportions of astragali tended to reflect the environment from which the samples came, yet there was significant overlap in the center of the distribution which muddied any stark distinction between open and closed landscapes (Harding et al., 2023: 8, Fig. 5). Based on the current findings and this previous study, we do not find sufficient evidence to support the hypothesis that terrain-adapted functional morphology overwhelmingly accounts for the variability that we observe in the present study.

- *Supplementary Data: Regarding geometric morphometrics analysis, it's crucial to address duplicate points. For instance, in the sliding procedure, landmarks 1 & 3 are duplicated. I suggest removing slidings 12 & 25 to prevent double-counting points, which could introduce bias. Further, it's worth noting that placing the end of one curve, the beginning of the next, and a fixed landmark in the same position results in the point being counted thrice, potentially leading to bias. Additionally, after digitization, consider removing two of these points before analysis,(given that the 3 landmarks are supposed to be in the same place, and therefore with 3 times more weight for this point than for another)*

  1 and 11 are part of the constellation of fixed landmarks, while 12 to 25 are the start and end points of a curve. We anchored it on purpose at the fixed landmarks 1 and 3, otherwise we would have a severe digitization bias. Although we are not sure why a consistent placing of landmarks the way we have done could introduce any bias, we “unslided” those points to check and found that the differences would be almost imperceptible: please compare the resulting ANOVA tables when “unsliding” the landmarks (top) vis a vis the original (bottom). Because we're not sure that we agree with the need to unslide the points, we would rather retain the procedure that we have used.

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             Df      SS        MS     Rsq      F      Z Pr(>F)
group         3 0.06485 0.0216154 0.11458 5.9279 6.1116  0.001 **
Csize         1 0.00765 0.0076498 0.01352 2.0979 2.1232  0.014 *
group:Csize   3 0.01579 0.0052630 0.02790 1.4433 1.4924  0.066 .
Residuals   131 0.47768 0.0036464 0.84401
Total       138 0.56596
            Df      SS        MS     Rsq      F      Z Pr(>F)
group         3 0.06398 0.0213280 0.11534 5.9762 5.9044  0.001 **
Csize         1 0.00781 0.0078066 0.01407 2.1874 2.2188  0.009 **
group:Csize   3 0.01541 0.0051373 0.02778 1.4395 1.4720  0.068 .
Residuals   131 0.46752 0.0035688 0.84280
Total       138 0.55472
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