

## Author's response

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We appreciate the interest shown by Dr. Shadmani and his colleagues in our recently published article entitled “Association between the bone scan index and activities of daily living in patients with advanced non-small cell lung cancer [1]” and his critical comments and useful suggestions [2].

They pointed out some methodological issues in our cross-sectional study. They insisted that a prediction model must be based on a longitudinal study, not on a cross-sectional one. We partially agree with this point. However, the purpose of this study was to investigate the association between the Bone Scan Index (BSI) and activities of daily living in patients with advanced non-small cell lung cancer, and not to devise a clinical prediction model. It is for this reason that we did not use the word “prediction” or “predictor” in the title of the article, but the word “association.” Furthermore, we used multivariable analysis using cross-sectional data to confirm the independency of the association of the BSI among the various risk factors, not to assume a clinical prediction model. A longitudinal cohort survey for the same purpose will require much more time and be more expensive. Such a study design would not be possible at our institute. However, we should have mentioned cross-sectional design as a study limitation in the “Conclusion” section and avoided use of the word “predict” in the text.

There are several reports of functional decline occurring at the end of life in cancer patients [3, 4]. In our study, we

evaluated the Barthel Index as a surrogate marker of the ADL, which is a simple, easy-to-evaluate, and accurate marker. We think that the BSI calculated by bone scintigraphy allows estimation of the patients' ADL, and is a helpful and practical parameter in the clinical setting. We guess that this study might not have with a high internal validity because of its retrospective nature. However, we believe that this study might allow a certain degree of generalizability, because the BSI was still identified as an independent factor by multivariable analysis of data from a relatively large cohort.

We would like to take into consideration these points in our next study. We thank Dr. Shadmani for his advice and shall carry out a better-quality survey the next time.

### Compliance with ethical standards

**Conflict of interest** The authors declare that they have no conflict of interest.

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