decreased the association with tumour volume. Finally, normalization and inter-observer variability had a larger impact on TA than SM and FO features.

Conclusion
To reduce false discovery rates, only reproducible features with respect to inter-observer variability and acquisition settings should be used. Due to the presence of arbitrary units in MRI, normalization before feature extraction should be performed. A smaller bin width (0.05) together with Gaussian normalization is suggested when extracting radiomics features. Gradient filter reduces the dependence from volume and might provide additional valuable information to non-filtered features.

PO-0960 Automated sarcopenia assessment and its predictive power in lung cancer radiotherapy patients
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Purpose or Objective
Sarcopenia is a condition of progressive muscle wastage, and is typically assessed by measuring the properties of the skeletal muscle at the L3 vertebral level. Several studies have investigated the predictive power of sarcopenia assessment, particularly in conjunction with chemotherapy. In this work, we introduce an automated method to extract a slice from routine PET/CT close to the L3 vertebral level and segment the skeletal muscle. Several characteristics of the muscle were investigated for their predictive power in a large retrospective cohort of lung radiotherapy patients in a Cox survival model.

Material and Methods
Skeletal muscle (SM), subcutaneous and visceral fat (SCF & VF) were manually delineated on 201 L3 slices from staging PET/CT images. A training (n=160) and validation (n=41) set was used to train an implementation of the well-known UNet convolutional neural network (CNN), configured to produce multi-label segmentation. This segmentation was followed by a dense conditional random field (CRF) to improve the results. The segmentation was validated using a 5-fold cross validation, with Distance To Agreement (DTA) calculated for each volume, see figure 1. The L3 vertebrae were segmented in staging PET/CT for 95 lung cancer using ADMIRE v2.0 (10 atlases). Slices at the centre of the propagated structures were extracted and segmented using CNN+CRF. Areas and mean HU were extracted from the segmentations. These, along with log tumour volume, N stage, high/low performance status (PS), gender, and age were tested using an elastic net regression, and those identified further analysed in a Cox model.

Results
The mean DTA ranged between 0.7 and 1.6 mm for the SM segmentation, which was reduced to between 0.3 and 1.3 mm following the CRF. Elastic net regression selected log tumour volume, N stage, high/low PS and gender. Of the sarcopenia variables, only the mean HU in the SM was selected. These variables informed a multivariate Cox model, the result of which is shown in table 1. Mean HU in the skeletal muscle was found to be predictive (p=0.016), with a hazard ratio of 0.98 per HU: more sarcopenic patients would be predicted to have worse outcome. An optimum split value of 0 HU was found; those patients with mean HU greater than this value have median survival 13.5 months, whereas those in the low mean HU group have median survival of only 9 months. Survival curves, and the result of a Cox regression analysis for the two groups are shown in figure 2 and table 1 respectively.

Conclusion
A fully automated sarcopenia assessment method has been developed and tested in a retrospective cohort of 95 lung cancer patients. This is the first analysis of the influence of sarcopenia on lung radiotherapy patient outcomes. In these patients, the mean HU of the SM has been found to be predictive, with an optimum cutoff of 0 HU. This can be explained as fat invasion in the SM is typical of sarcopenic patients, lowering the mean HU.

PO-0961 MR-dImage biomarkers to identify partial HNC responders that advance to complete responders
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Purpose or Objective
Many head and neck cancer (HNC) patients have radiological partial tumour response assessed 2 months after definitive (chemo-)radiotherapy. Most of these