ESTRATTA

Quesiti:

1. Il candidato discuta i vantaggi dell'integrazione RIS-PACS in un unico sistema.

2. Il candidato esponga vantaggi e svantaggi dell'analisi dati MRI con linguaggio MATLAB rispetto ad altri programmi

Prova di inglese

Contrast images of interest were also produced (letter vs. baseline for the word generation task; bisection vs. control for the landmark task, and faces vs. objects for the faces task), and imported into a 2nd-level or random-effects analysis to obtain group results for each of the tasks. A one-sample t-test was performed on these images to see the general pattern of activation for each of the tasks. The statistical parametric maps were interpreted after applying a family-wise error (FWE) correction with $p < 0.05$. Laterality indices were calculated for each subject using the LI toolbox available from the SPM website. This applies a bootstrapping technique allowing about 10 000 indices to be calculated at different thresholds yielding a robust mean, maximum, and minimum index.

Prova pratica sui software applicativi

Calcolare la differenza tra due medie effettuando un t-test accoppiato a due vie tra due serie di valori numerici presenti in più celle contigue in Excel.

Busta N. 2

Quesiti:

1. Il candidato discuta le principali differenze nell'imaging a 1.5 e 3T.

2. Il candidato esponga le funzioni e le problematiche principali di un sistema RIS-PACS

Prova di inglese

Each functional run was corrected for slice timing and motion and registered onto the T2*-FFE volume. Combining the T2*-FFE to T1-weighted registration parameters and the spatial normalization parameters, functional images were resampled to the 2×2×2 mm3 template space and spatially smoothed (Gaussian 6 mm full width at half maximum filter). First, for each participant, each block was modelled using a boxcar function of 30 s convolved with the canonical haemodynamic response function and its temporal derivative used in statistical parametric mapping (SPM). Low frequency confounds were excluded from the model by implementing a high-pass filter (120 s), and a movement regressor was also included in the model. First-level contrast images for each participant were computed.

Prova pratica sui software applicativi

Calcolare media, deviazione standard ed errore standard di una serie di valori numerici presenti in più celle contigue in Excel.

Busta N. 1

Quesiti:

1. Il candidato discuta i metodi per la normalizzazione spaziale di un immagine di RM del cervello.

2. Il candidato esponga le differenze principali tra programmi per analisi dati MRI basati su linguaggio MATLAB e PYTHON

Prova di inglese

Asynchronous slice acquisition was compensated by sinc interpolation so that all slices were aligned to the start of the frame. A whole-brain normalization corrected for changes in signal intensity across scans. Data were realigned within and across scans to correct for head movement. Atlas space images were created using the following procedure. For each subject, an EPI image based on the average of the first frame of each functional run was registered to the subject's T2-weighted structural image, which in turn was registered to the subject's T1-weighted MP-RAGE. Both registrations were accomplished using a cross-modal procedure based on aligning image gradients. The MP-RAGE was then transformed to an atlas-space representative target using a 12-parameter affine transformation.

Prova pratica sui software applicativi

Effettuare un istogramma di frequenza di valori numerici presenti in più celle contigue in Excel.