

Figure S1. Water, fat, field and R_2^* reference images are shown (a) in a healthy volunteer. (b), (c), and (d) show corresponding results for supervised (STD), unsupervised (UTD), and no-training (NTD) methods when real/imaginary format of the complex signal was used as network input. ROI measurement correlation Bland-Altman analysis shows poor agreement between each DNN method and the reference T2*IDEAL reconstruction for proton density fat fraction (e), field (f), and R_2^* (g).

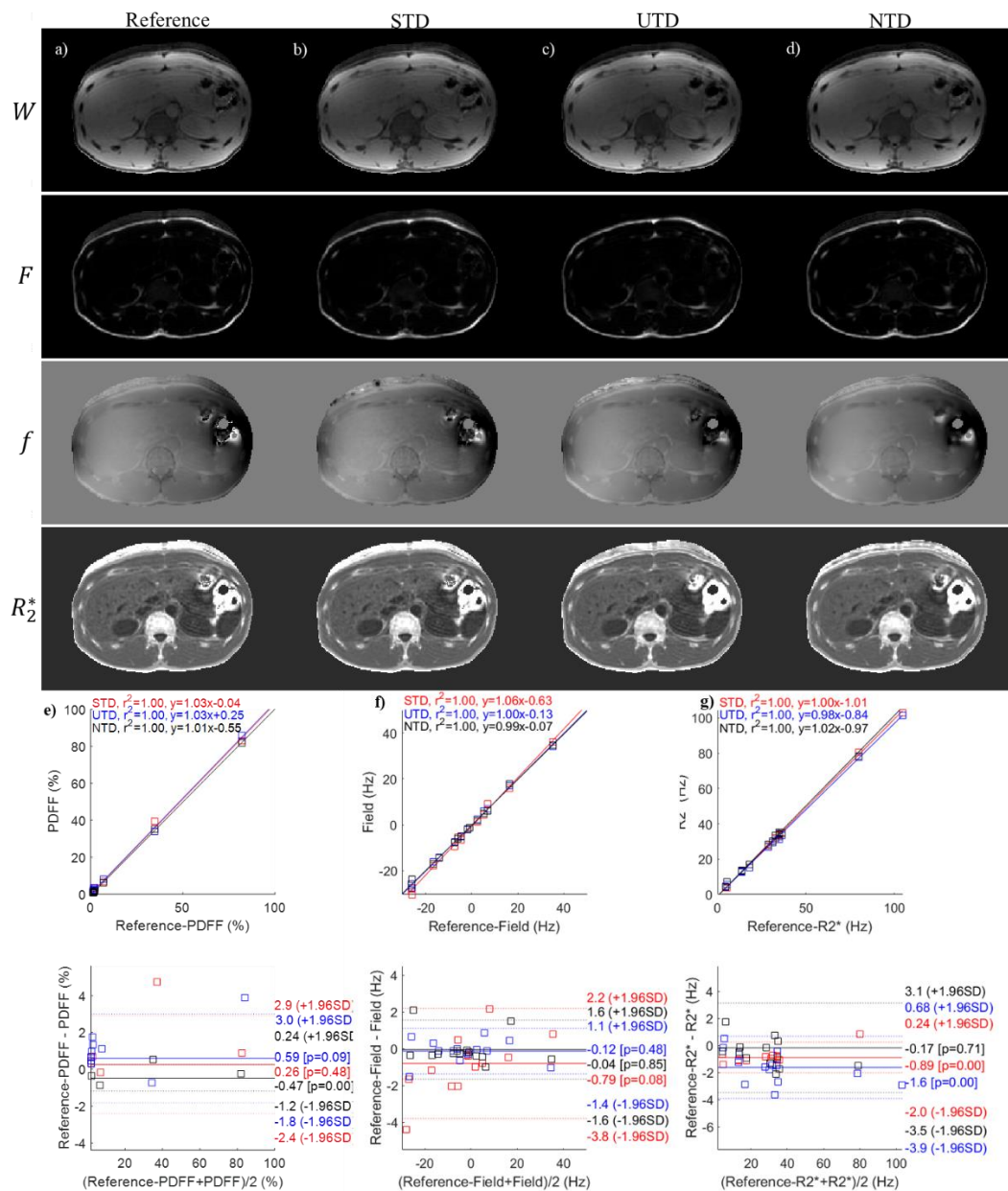


Figure S2. Water, fat, field and R_2^* reference images are shown (a) in a healthy volunteer. (b), (c), and (d) show corresponding results for supervised (STD), unsupervised (UTD), and no-training (NTD) methods. ROI measurement correlation and Bland-Altman analysis shows excellent agreement between each DNN method and the reference T_2^* -IDEAL reconstruction for proton density fat fraction (e), field (f), and R_2^* (g).

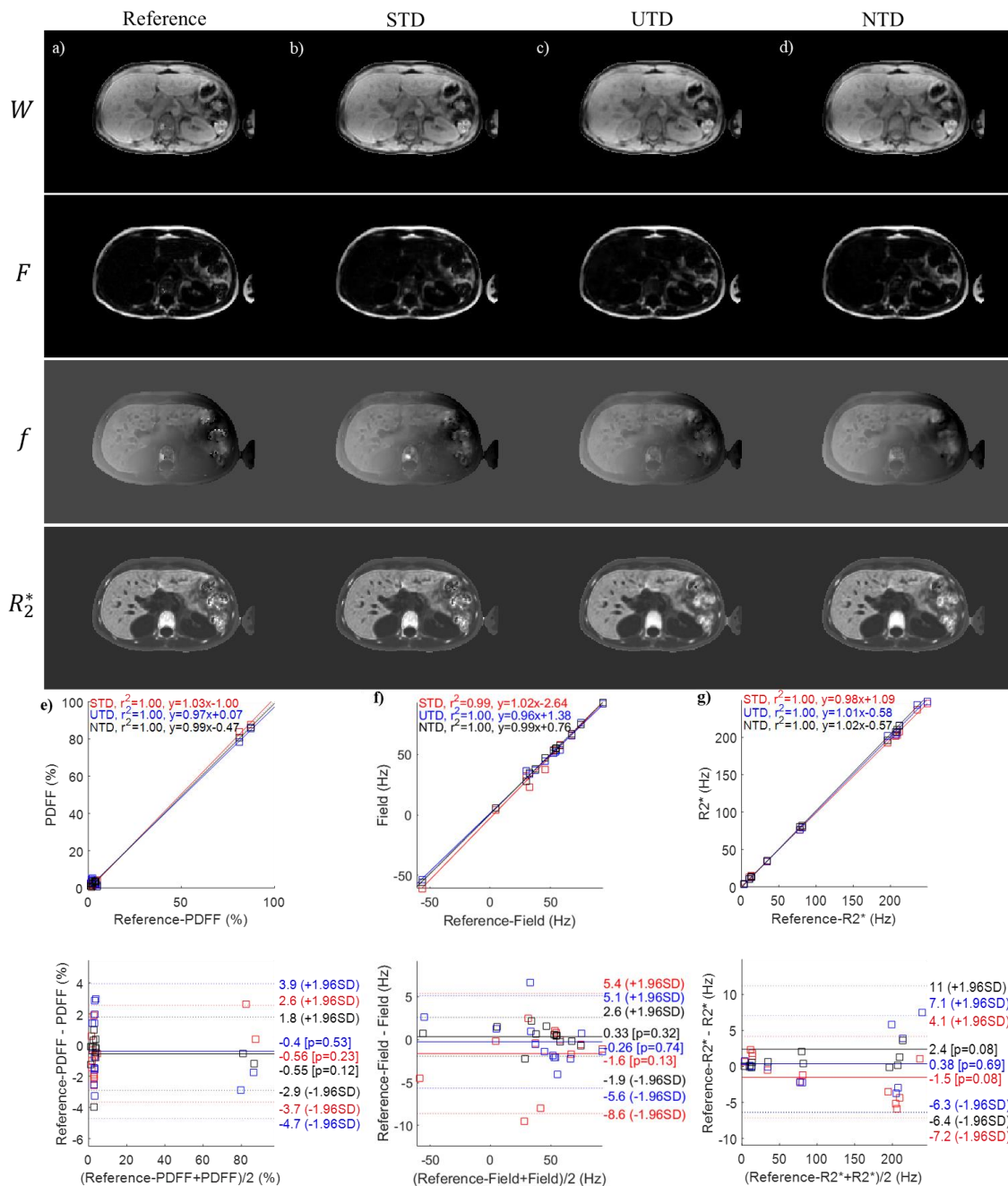


Figure S3. Water, fat, field and R_2^* reference images are shown (a) in a moderate iron-overload patient. (b), (c), and (d) show corresponding results for supervised (STD), unsupervised (UTD), and no-training (NTD) methods. ROI measurement correlation and Bland-Altman analysis shows very good agreement between each DNN method and the reference T2*-IDEAL reconstruction for proton density fat fraction (e), field (f), and R_2^* (g).

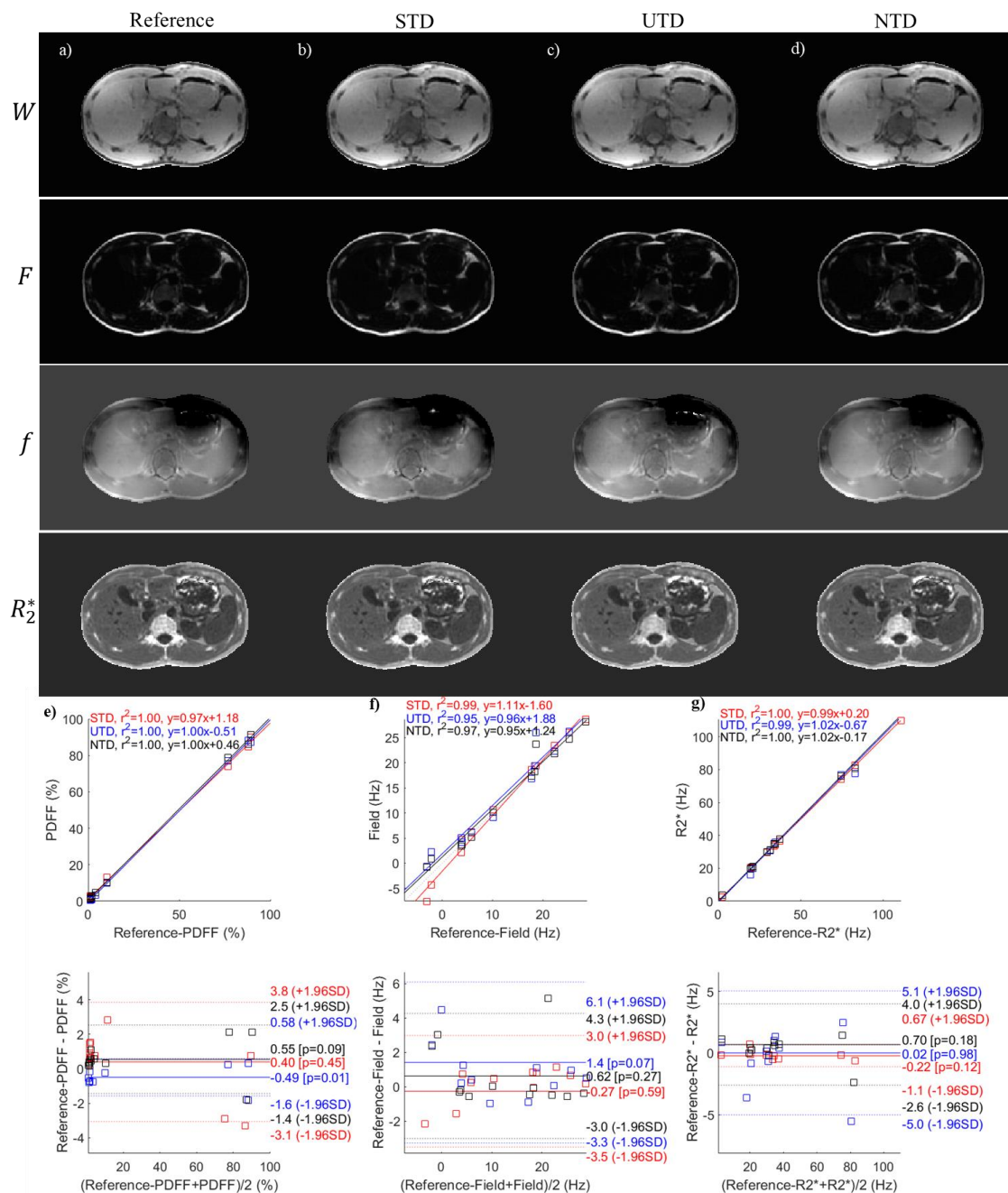


Figure S4. Water, fat, field and R_2^* reference images are shown (a) in a healthy volunteer. (b), (c), and (d) show corresponding results for supervised (STD), unsupervised (UTD), and no-training (NTD) methods. ROI measurement correlation and Bland-Altman analysis shows excellent agreement between each DNN method and the reference T2*-IDEAL reconstruction for proton density fat fraction (e), field (f), and R_2^* (g).

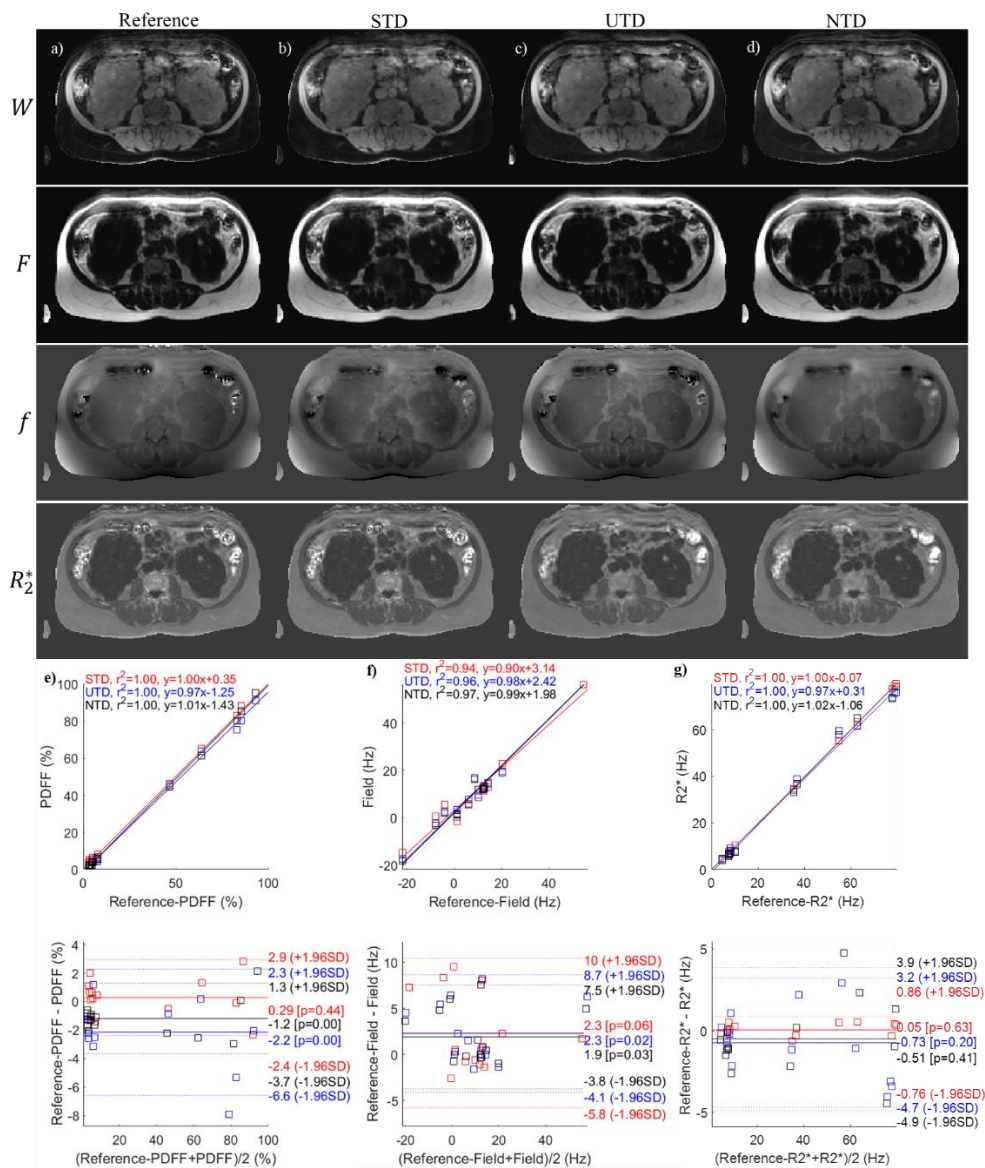


Figure S5. Water, fat, field and R_2^* reference images are shown (a) in a polycystic kidney disease patient. (b), (c), and (d) show corresponding results for supervised (STD), unsupervised (UTD), and no-training (NTD) methods. ROI measurement correlation and Bland-Altman analysis shows excellent agreement between each DNN method and the reference T2*-IDEAL reconstruction for proton density fat fraction (e), field (f), and R_2^* (g).

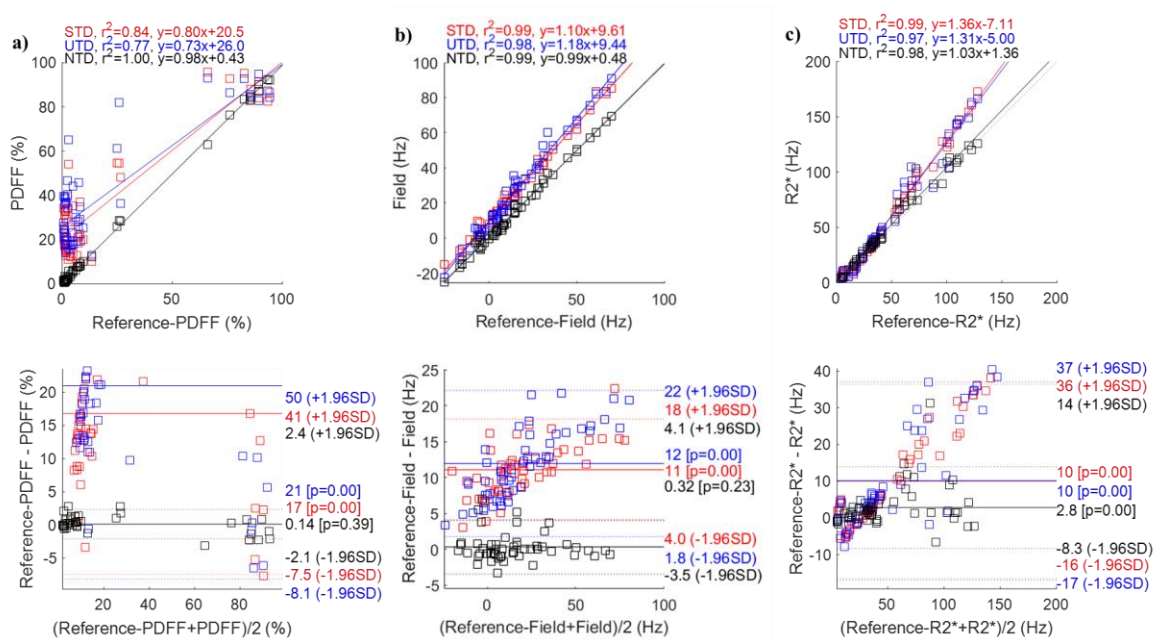


Figure S6. ROI measurement correlation and Bland-Altman analysis comparing supervised (STD), unsupervised (UTD), and no-training (NTD) methods with the reference T2*-IDEAL for proton density fat fraction (a), field (b), and R2* (c) in n=6 subjects (3 healthy volunteers, 3 iron-overload patients).