

6.1. Examination protocol whole-body MRI

The sequences of the whole-body protocol are described in the table below. In the implementation of the whole-body MRI protocol, the administration of an MRI contrast agents is omitted. It includes comprehensive diagnostics of the skeletal system (including the spine), head, neck, lungs and abdomen. The whole-body protocol is performed in the supine position.

body area	sequence name	TR in ms	TE in ms	SD in mm	time in minutes
localizer	GK_FastView	3:31	2:19	5	0:48
whole-body	GK_T2_tirm_cor_320_p2	4891	65	5	12:09
spine	WS_T2_tse_sag	3760	106	4	2:04
spine	WS_T1_tse_sag	676	12	4	2:42
spine	T2* (Osteo)	432	9, 13.6, 18.3, 22.9, 27.6	5	1:14
head	Kopf_T2_tse_sag	2610	102	3	0:46
head	Kopf_T2_spc_irprep_tra_dark -fluid_p2	5000	325	3	3:47
head	Kopf_T1_mpr_tra_iso_p2	1900	3:37	1	3:38
head	Kopf_ep2d_diff_3_scan_trace _p2	2900	89	5	1:10
head	Kopf_T2_swi3d_tra_p2_fast	49	40	3	2:35
head	Kopf_TOF_3d_multi_slab	23	7	0.7	3:23
neck	Hals_T1_tse_tra_p2	587	11	4	2:02
thorax	Thorax_vibe_no-fs_tra_bh	3:05	1:12	3	0:21
thorax	T2_haste_tra_bh_p2	550	22	5	0:40
abdomen	Oberbauch_T2_blade_fs_tra_ mbh_p2 Atemtriggerung	2720	116	6	1:16

body area	sequence name	TR in ms	TE in ms	SD in mm	time in minutes
abdomen	MRCP_T2_tse3d_rst_cor_p2_384	957	622	1.5	1:42
Secrelux®	1 KE/kg KG	Injection duration 2 min		20 ml phys. NaCl	
abdomen	Abdomen_T1_fl2d_fs_tra_mb_h_Abd	251	4:13	6	1:17
abdomen	Leber_ep2d_diff_b50_400_80_0_p2_trig	1700	72	6	2:55
abdomen	MRCP_T2_tse3d_rst_cor_p2_384*	957	622	1.5	1:42
abdomen	Dixon_t2star_corr_tra_224	11:0	2:38	3	0:19
abdomen	Körperstamm_T1_vibe_tra_p2_dixon	7:48	2:38	5	0:38
pelvis	Becken_pd_tse_fs_tra_384_p2	3230	34	3	2:43

* 2. MRCP measurement is only performed in conjunction with the administration of Secrelux®.

6.1.2. Examination protocol whole-body MRI with native mamma

For woman, the native breast is examined according to the native whole-body protocol. This results in an examination time of approx.. 80 minutes for woman.

sequence name	TR in ms	TE in ms	SD in mm	time in minutes
localizer	7:10	3:32	6	0:12
TIRM tra	5800	56	6	3:01
T2 tse tra	4660	67	4	3:17
Diffusion – epi 2d tra	7900	91	4	4:05
TWIST-Dynamik	8:86	4:51	1,5	1:53

6.4. Examination protocol MRI heart-mamma

6.4.1. Process of the MRI heart-mamma module

The MRI module heart mamma is only performed in women. The Protocol is based on the clinically used sequences. For technical reasons (application of the mamma coil), the subject must be repositioned in the prone position after the whole-body and native cardiac MRI has been performed. In order to examine the heart after contrast medium administration, the patient must be repositioned again after the mamma MRI. Subsequently, the contrast series of the heart (delayed enhancement) can be performed.

6.4.1.1. Examination protocol MRI heart

sequence name	TR in ms	TE in ms	SD in mm	time in minutes
trufi_loc_multi_iPAT@ _c	285:16	1:14	8	0:11
trufi_2_chamber_iPAT	253:6	1:14	8	0:08
trufi_4_chamber -iPAT	268:72	1:21	8	0:08
trufi _short_ axis _ iPAT	268:72	1:21	8	0:63
tf_2d7_retro_iPAT_4CV	18:55	1:12	6	0:60
tf_2d7_retro_iPAT_3CV	18:55	1:12	6	0:10
tf_2d7_retro_iPAT_2CV	18:55	1:12	6	0:60
tf_2d22_retro_sax_TR_4	44:96	1:20	6	0:54
tf_2d22_retro_RV_tra	56:20	1:18	6	1:17
Contrast agent series				
trufi_loc_multi_iPAT@ _c	285:16	1:14	8	0:11
TI-Scout	21:87	1:03	8	0:15
tfi_single_shot_12sl_bh	809:60	1:04	10	0:35
tfi_psiir_single_shot_12sl	755:00	1:03	10	0:35

6.4.1.2. Examination protocol MRI-Mamma

sequence name	TR in ms	TE in ms	SD in mm	time in minutes
localizer	7:1	3:32	6	0:12
TIRM tra	5800	56	6	3:01
T2 tse tra	4660	67	4	3:17
Diffusion – epi 2d tra	7900	91	4	4:05
GADOVIST®	0,1 ml/kg/KGX 1,0		flow 2 ml/Sek;	20 ml phys. NaCl
TWIST-Dynamik	8:86	4:51	1,5	7:03

6.5. Examination protocol MRI heart/arterial vascular system

6.5.1. Protocol MRI heart

sequence name	TR in ms	TE in ms	SD in mm	time in minutes
trufo_loc_multi_iPAT@_c	285:16	1:14	8	0:11
trufo_2_chamber_iPAT	253:6	1:14	8	0:08
trufo_4_chamber –iPAT	268:72	1:21	8	0:08
trufo_short_axis_iPAT	268:72	1:21	8	0:63
tf_2d7_retro_iPAT_4CV	18:55	1:12	6	0:60
tf_2d7_retro_iPAT_3CV	18:55	1:12	6	0:10
tf_2d7_retro_iPAT_2CV	18:55	1:12	6	0:60
tf_2d22_retro_sax_TR_44	44:96	1:20	6	0:54
tf_2d22_retro_RV_tra	56:20	1:18	6	1:17
Contrast agent series				
trufo_loc_multi_iPAT@_c	285:16	1:14	8	0:11
TI-Scout	21:87	1:03	8	0:15
tfo_single_shot_12sl_bh	809:60	1:04	10	0:35
tfo_psr_single_shot_12sl	755:00	1:03	10	0:35

After all sequences for the additional heart module have been completed, we calculate a total measurement time, including delayed enhancement, of 18 minutes - under optimal conditions. The heart contraction is linked to the measurement time of the heart rate, so that this can vary from subject to subject (+/- 8 minutes).

6.5.2. Protocol whole-body angiography

MRI angiography is only performed in men following the whole body MRI. Repositioning of the subject is not necessary. The examination is performed in the supine position, head first. MRI angiography is performed in combination with the MRI cardiac protocol. A time of approx.. 10 min. is planned for the MRI angiography.

sequence name	TR in ms	TE in ms	SD in mm	time in minutes
1. Localizer				
IV_trufisp_head	3:67	1:84	7	0:19
III_trufisp_abdomen	3:67	1:84	7	0:17
II_trufisp_legs	3:67	1:84	7	0:17
I_trufisp_feet	3:67	1:84	7	0:17
2. Nativserie				
I_fl3d_cor_feet_pre	2:55	0:90	1,5	0:16
II_fl3d_cor_legs_pre	2:48	0:90	1,5	0:12
III_fl3d_cor_abdomen_pre	2:48	0:90	1,5	0:12
IV_fl3d_cor_head_pre	2:48	0:90	1,5	0:11
GADOVIST®	0,1 ml/kg/KG X 1,5		flow 2 ml/sek;	20 ml phys. NaCl
IV_care_bolus_cor	33:54	1,19	18	1:29
3. Contrast agent series				
IV_fl3d_cor_head_post	2:48	0:09	1,5	0:11
III_fl3d_cor_abdomen_post	2:48	0:09	1,5	0:12
II_fl3d_cor_legs_post	2:48	0:09	1,5	0:12
I_fl3d_cor_feet_post	2:55	0:09	1,5	0:16
Abdomen_T1_fl2d_fs_tra_ mbh_Abd_KM	251	4:13	6	1:17

