

**On-line Table 1: Demographic and clinical histories of all patients with juvenile idiopathic arthritis including a description of the ILAR classification and TMJ symptoms**

JIA Pts	Sex	ILAR Category	Age		TMJ Symptoms										Age at Time of MRI (yr)
			At JIA Diagnosis (yr)	At Time of TMJ Symptoms (yr)	Limited Jaw Opening	Pain	Mandibular Asymmetry	Retrognathia	Unilateral vs Bilateral TMJ Involvement	TMJ Symptoms at Time of MRI					
1	F	Oligo	7.3	7.3	N	N	Y	N	N	Unilateral	Y	14.1			
2	F	Poly	1	15.4	Y	Y	Y	N	N	Unilateral	N	7.1			
3	F	Oligo	1.2	11.9	Y	Y	N	Y	Y	Bilateral	Y	18.0			
4	F	Oligo	10	10	Y	Y	N	Y	Y	Bilateral	Y	33.3			
5	M	Oligo	13	14	Y	Y	Y	N	N	Unilateral	Y	16.0			
6	F	Oligo	1.9	9.4	Y	Y	N	N	N	Unilateral	Y	12.6			
7	F	Poly	1.6	9.4	Y	Y	N	N	N	Unilateral	Y	9.9			
8	F	Oligo	7	14	Y	Y	N	Y	Y	Bilateral	Y	17.8			

**Note:**—ILAR indicates International League for Associations of Rheumatology; Oligo, oligoarticular disease; Poly, polyarticular disease; Pts, patients; N, no; Y, yes.

**On-line Table 2: Description of the medication histories of all patients with JIA<sup>a</sup>**

Pts with JIA	Systemic Medication Use										IAS Use															
	DMA	NSAIDs at MRI	NSAIDs	CS at MRI	CS	MTX	MTX	My	My	My at MRI	Etan	Etan	Etan	Inf	Inf	Inf	Inf	Ada	Ada	Ada	IAS	IAS	IAS	IAS		
1	Y	N	N	N	NA	NA	NA	NA	NA	N	NA	N	Y	6	N	N	Y	18	Y	Y	Y	Y	Y	Y	Y	28.8
2	N	N	N	N	Y	3	NA	NA	NA	N	Y	1	Y	N	NA	N	N	NA	N	N	Y	Y	Y	N	N	3.1
3	N	Y	N	N	NA	NA	NA	NA	NA	N	N	N	N	N	NA	N	N	NA	N	N	Y	Y	Y	Y	Y	30.3
4	N	Y	N	N	NA	NA	NA	NA	NA	N	N	N	N	N	NA	N	N	NA	N	N	N	N	N	N	N	NA
5	N	Y	N	N	NA	NA	NA	NA	NA	N	N	N	N	N	NA	N	N	NA	N	N	Y	Y	Y	Y	Y	15.6
6	Y	N	Y	14	N	19, 4	Y	6	N	N	N	N	Y	8, 3	N	N	Y	48	Y	Y	N	N	N	N	N	NA
7	Y	N	Y	2	N	22, 22, 7	Y	NA	N	N	N	N	N	N	NA	N	N	NA	N	N	N	N	N	N	N	NA
8	N	Y	N	N	NA	NA	N	NA	N	N	N	N	N	N	NA	N	N	NA	N	N	Y	Y	Y	Y	Y	15.0

**Note:**—NSAID indicates nonsteroidal antiinflammation drug; DMA, systemic disease modifying agent; IAS to MRI, time from the last intra-articular steroid injection to the MRI measured in days; CS, corticosteroid;  $\Delta T$  (mo), duration of time on the specified medication; MTX, methotrexate; My, mycophenolate; Etan, etanercept; Inf, infliximab; Ada, adalimumab; IAS, interarticular steroid injection; TA/K, triamcinolone hexacetonide (Kenalog); TH/A, triamcinolone hexacetonide (Aristospan); Y, yes; N, no; NA, not applicable.

<sup>a</sup> Pertaining to the medication history, we recorded the following: a history of NSAID use at any point between diagnosis and time of MRI, use of NSAIDs during the MRI, history of systemic steroids to treat JIA at any point between diagnosis and time of MRI, duration of steroid use prior to MRI, use of steroids during MRI, history of systemic methotrexate used to treat JIA at any point between diagnosis and time of MRI, duration of methotrexate use prior to MRI, use of methotrexate during MRI, history of systemic mycophenolate to treat JIA at any point between diagnosis and the time of MRI, duration of mycophenolate use prior to MRI, use of mycophenolate during MRI, history of etanercept to treat JIA at any point between diagnosis and time of MRI, duration of etanercept use prior to MRI, use of etanercept during MRI, history of infliximab to treat JIA at any point between diagnosis and time of MRI, duration of infliximab use prior to MRI, use of infliximab during MRI, history of adalimumab to treat JIA at any point between diagnosis and the time of MRI, duration of adalimumab use prior to MRI, use of adalimumab during MRI, number of IASs at any point prior to the MRI, use of triamcinolone hexacetonide (Kenalog) versus hexacetonide (Aristospan), and average time and range between most recent IAS and MRI.

**On-line Table 3: Demographics and medication history of the 4 control patients (8 control TMJ joints)**

Control Patients	Sex	Medication History	Age (yr)	Indication for MRI	IS 3-Mo Prior to MRI
9	F	None	10	Precocious puberty	N
10	M	None	18	Short stature	N
11	M	None	17	Short stature	N
12	M	None	17	Short stature	N

**Note:**—IS indicates immunosuppressant medication history, including corticosteroids; N, no.

**On-line Table 4: The peak, time-to-peak, minimum and average values for equations: ER1, ER2, and R for the symptomatic, asymptomatic, and control joints<sup>a</sup>**

Joint Classification, Pt No.	Peak			Time to Peak			Minimum			Average 0-3.5			Average 3.5-7.5			Average 7.5-13.1			
	ERI	ER2	R	ERI	ER2	R	ERI	ER2	R	ERI	ER2	R	ERI	ER2	R	ERI	ER2	R	
	Symptomatic JIA Joints																		
1 RT	32.113	1.15	1.85	11.50	6.3	11.5	5.89	0.81	1.44	15.27	0.69	1.36	9.38	1.06	1.71	221.48	1.09	1.79	
2 LT	136.32	2.15	1.27	13.10	13.1	6.3	4.25	1.56	1.27	0.76	0.20	0.81	6.14	1.89	1.40	83.02	2.08	1.21	
3 RT	6.76	1.55	2.68	10.30	10.3	10.3	2.09	0.68	1.67	2.66	0.67	1.74	3.56	1.16	2.14	5.41	1.51	2.55	
3 LT	6.02	1.38	2.46	10.30	9.1	9.1	3.35	1.18	2.09	4.27	1.12	2.13	4.15	1.35	2.29	4.93	1.38	2.37	
4 RT	6.10	1.13	2.23	11.50	11.5	11.5	0.82	0.10	1.29	1.67	0.33	1.44	2.39	0.60	1.60	4.48	1.05	2.07	
4 LT	7.63	1.42	2.57	11.50	11.5	11.5	1.91	0.23	1.48	3.05	0.58	1.75	4.48	1.10	2.14	5.49	1.29	2.36	
5 RT	6.97	1.90	2.71	9.10	9.1	9.1	1.98	0.62	1.39	2.19	0.56	1.38	4.12	1.18	1.97	5.83	1.67	2.47	
6 LT	12.37	2.28	3.49	6.30	6.3	6.3	4.59	1.76	2.67	12.75	1.92	3.13	1.26	0.29	0.73	7.26	2.04	3.10	
7 RT	6.21	1.51	2.43	13.10	13.1	13.1	2.34	1.02	1.71	2.81	0.96	1.77	3.02	1.16	1.89	4.49	1.33	2.17	
8 RT	17.75	0.93	1.47	11.50	11.5	11.5	2.52	0.37	0.85	4.47	0.44	0.95	4.91	0.50	1.00	15.08	0.81	1.35	
8 LT	24.34	1.28	1.78	11.50	13.1	13.1	2.84	0.22	0.71	4.59	0.47	0.94	8.06	0.84	1.30	22.36	1.21	1.71	
Asymptomatic JIA Joints																			
1 LT	136.32	0.48	1.27	13.10	9.1	11.5	4.25	0.58	1.27	9.88	0.48	1.27	6.14	0.70	1.40	83.02	0.44	1.21	
2 RT	2.68	0.54	1.19	13.10	13.1	13.1	0.53	0.09	0.76	0.76	0.20	0.81	1.42	0.42	0.98	2.19	0.50	1.12	
5 LT	7.11	1.98	2.75	5.10	5.1	5.1	4.21	1.31	2.05	5.95	1.44	2.23	6.06	1.76	2.52	5.15	1.47	2.23	
6 RT	2.12	0.39	0.89	6.30	5.1	6.3	0.30	0.03	0.58	0.90	0.19	0.68	1.26	0.29	0.73	0.68	0.94	0.27	0.70
7 LT	3.26	1.02	1.90	9.10	9.1	9.1	1.31	0.40	1.29	2.09	0.72	1.56	2.03	0.78	1.55	2.28	0.68	1.56	
Control joints																			
9 RT	2.21	0.94	1.54	6.30	6.3	6.3	0.36	0.13	0.80	0.98	0.31	1.01	2.02	0.85	1.46	1.93	0.84	1.43	
9 LT	2.04	0.86	1.41	7.50	7.5	7.5	0.38	0.14	0.73	0.83	0.26	0.90	1.75	0.74	1.28	1.59	0.69	1.22	
10 RT	0.65	0.42	1.00	5.10	9.1	5.1	0.11	0.06	0.75	0.37	0.24	0.86	0.61	0.38	0.98	0.06	0.31	0.90	
10 LT	1.03	0.62	1.26	9.10	9.1	9.1	0.57	0.38	0.93	0.37	0.24	0.86	0.87	0.55	1.15	0.87	0.55	1.14	
11 RT	3.11	0.73	1.25	11.30	7.5	7.5	0.95	0.42	0.81	1.19	0.28	0.81	2.38	0.55	1.08	2.62	0.49	1.01	
11 LT	3.21	0.81	1.24	13.10	7.5	7.5	0.95	0.42	0.81	1.19	0.28	0.81	2.38	0.55	1.08	2.62	0.49	1.01	
12 RT	2.05	0.26	1.45	7.50	5.1	5.1	0.67	0.16	1.20	1.17	0.20	1.32	1.70	0.28	1.41	1.33	0.15	1.36	
12 LT	5.72	0.73	1.70	9.10	9.1	9.1	2.56	0.57	1.44	3.31	0.60	1.51	1.70	0.28	1.41	4.52	0.52	1.51	
Average																			
Symptomatic JIA	50.14	1.52	2.27	10.88	10.45	10.30	2.96	0.78	1.50	4.95	0.72	1.58	4.68	1.01	1.65	34.53	1.41	2.10	
Asymptomatic JIA	30.30	0.88	1.60	9.34	8.30	9.02	2.12	0.48	1.19	3.92	0.61	1.31	3.38	0.79	1.44	18.71	0.67	1.36	
Control	2.50	0.67	1.36	8.63	7.65	7.15	0.82	0.28	0.93	1.18	0.30	1.01	1.68	0.52	1.23	1.94	0.51	1.20	

**Note:**—RT indicates right; LT, left; Pt, patient.

<sup>a</sup> Mean calculations are demonstrated at the bottom 3 rows of the table.

Note that for the average peak values, ER2 exhibits the most favorable ratio of symptomatic to asymptomatic joints at 1.73 (1.52/0.88), compared with ER1 1.65 (50.34/30.30) and R 1.4 (2.27/1.6). ER2 exhibits a more favorable ratio of average peak values between symptomatic joints and controls 2.27 (1.52/0.67) compared to R 1.67 (2.27/1.36). ER2 shows a slightly more favorable ratio of average peak values between asymptomatic joints and controls 1.3 (0.88/0.67) compared to R 1.2 (1.6/1.36).

**On-line Table 5: The rate of change of ERI, ER2, and R and threshold scores for ER2 and R<sup>a</sup>**

Joint Classification, Pt No.	Rate of Change 0-3.5			Rate of Change 3.5-7.5			Rate of Change 7.5-13.1			Threshold score for ER2			Threshold score for R	
	ERI	ER2	R	ERI	ER2	R	ERI	ER2	R	No. Times >0.95	No. Times <0.95	No. Times >1.55	No. Times <1.55	
<b>Symptomatic JJA joints</b>														
1 RT	-6.92	0.11	0.08	-0.41	-0.08	-0.08	155.83	0.07	0.11	6	4	6	4	
2 LT	-3.77	0.39	0.07	0.10	0.08	0.00	65.91	0.05	0.05	9	1	0	10	
3 RT	-0.38	0.12	0.01	0.60	0.12	0.15	-1.32	-0.03	-0.13	7	3	10	0	
3 LT	-0.47	0.20	0.10	0.46	0.05	0.08	-1.19	-0.03	-0.13	9	1	10	0	
4 RT	0.57	0.16	0.11	-0.15	0.08	0.02	0.03	-0.02	-0.01	3	7	6	3	
4 LT	0.65	0.21	0.16	-0.90	-0.01	-0.07	-0.08	-0.06	-0.04	6	4	9	1	
5 RT	-0.18	0.07	0.02	1.00	0.26	0.27	-0.02	-0.08	-0.07	3	7	7	3	
6 LT	0.53	0.13	0.10	0.30	0.07	0.09	0.49	0.03	0.06	9	1	10	0	
7 RT	0.67	0.30	0.27	0.49	0.08	0.11	1.14	0.08	0.14	7	3	9	1	
8 RT	0.17	0.07	0.06	-0.63	-0.01	-0.02	-0.76	0.00	0.00	0	10	0	10	
8 LT	1.26	0.18	0.17	-0.75	0.06	0.05	1.87	0.17	0.17	4	6	2	8	
<b>Asymptomatic JJA joints</b>														
1 LT	-3.77	0.10	0.02	0.10	-0.01	0.00	65.91	0.01	0.05	0	10	0	10	
2 RT	0.16	0.07	0.04	0.28	0.02	0.05	0.34	0.04	0.05	0	10	0	10	
5 LT	-1.09	0.09	0.03	-0.43	-0.13	-0.13	0.47	0.08	0.09	10	0	10	0	
6 RT	0.53	0.13	0.10	0.30	0.07	0.09	-0.18	-0.07	-0.06	0	10	0	10	
7 LT	0.67	0.30	0.27	-0.63	-0.01	-0.02	0.61	0.06	0.12	3	7	5	5	
<b>Control joints</b>														
9 RT	-0.22	-0.06	-0.08	0.16	0.05	0.06	-0.05	-0.03	-0.02	0	10	0	10	
9 LT	-0.15	-0.03	-0.06	0.16	0.06	0.06	-0.03	-0.02	-0.01	0	10	0	10	
10 RT	0.17	0.11	0.07	-0.02	-0.02	0.00	-0.78	0.03	0.05	0	10	0	10	
10 LT	-0.10	-0.04	-0.09	0.08	0.04	0.06	0.00	-0.01	0.01	0	10	0	10	
11 RT	0.12	0.04	0.03	0.00	0.01	0.01	1.28	0.03	0.13	0	10	0	10	
11 LT	0.12	0.04	0.03	0.00	0.01	0.01	1.28	0.03	0.13	0	10	0	10	
12 RT	-0.12	0.00	-0.04	0.03	-0.04	0.00	-0.04	-0.01	0.00	0	10	0	10	
12 LT	-0.19	0.05	0.02	0.82	0.02	0.05	-0.15	-0.03	-0.03	0	10	4	6	
Average														
Symptomatic JJA	-0.72	0.18	0.10	0.01	0.06	0.05	20.17	0.02	0.01	5.73	4.27	6.27	3.64	
Asymptomatic JJA	-0.70	0.14	0.09	-0.08	-0.01	0.00	13.43	0.02	0.05	2.60	7.40	3.00	7.00	
Control	-0.05	0.01	-0.01	0.15	0.02	0.03	0.19	0.00	0.03	0.00	10.00	0.50	9.50	

**Note:**—RT indicates right TMJ joint; LT, left TMJ joint.  
<sup>a</sup> The rates of change of ERI, ER2, and R were calculated by subtracting the values from consecutive runs and dividing by the sampling duration in minutes for each sampling range. For example, the rate of change of ER2 from 3.5 to 7.5 minutes = ER2 at end of 6 min 40 sec to 7 min 50 sec run - ER2 at end of 2 min 40 sec to 3 min 50 sec run divided by 3 minutes and 50 seconds.

**On-line Table 6: Results of the Mann-Whitney U test and the corresponding P value for the comparisons of asymptomatic JIA versus controls, controls versus symptomatic JIA, and asymptomatic JIA versus symptomatic JIA joints using the ER1 and ER2 equations, plotted against time<sup>a</sup>**

		Minutes and Statistics																			
		1.1		2.3		3.5		5.1		6.3		7.5		9.1		10.3		11.5		13.1	
		MW	P Value	MW	P Value	MW	P Value	MW	P Value	MW	P Value	MW	P Value	MW	P Value	MW	P Value	MW	P Value	MW	P Value
ER1	Asymptomatic vs control	15	.46	14	.38	5	.03 <sup>b</sup>	19	.88	15	.46	15	.46	11	.19	9	.11	14	.38	13	.31
	Control vs symptomatic	11	.006 <sup>b</sup>	6	.002 <sup>b</sup>	3	<.001 <sup>b</sup>	3	<.001 <sup>b</sup>	5	.001 <sup>b</sup>	19	.04 <sup>b</sup>	6	.002 <sup>b</sup>	4	.001 <sup>b</sup>	3	.007 <sup>b</sup>	4	.01 <sup>b</sup>
	Asymptomatic vs symptomatic	17.5	.26	19.5	.36	16.5	.21	16.5	.21	13.5	.11	18.5	.31	15.5	.17	4.5	.009	13	.09	13.5	.11
ER2	Asymptomatic vs control	20	1	17	.67	7	.06	20	1	18	.77	13	.31	16	.56	16	.56	20	1	17	1
	Control vs symptomatic	26	.21	5	.002 <sup>b</sup>	3	.001 <sup>b</sup>	9	.006 <sup>b</sup>	7	.003 <sup>b</sup>	12	.01 <sup>b</sup>	7	.003 <sup>b</sup>	1	<.001 <sup>b</sup>	0	<.001 <sup>b</sup>	1	<.001 <sup>b</sup>
	Asymptomatic vs symptomatic	16	.27	16	.27	17	.33	13	.14	11	.09	15	.22	12	.11	4	.01 <sup>b</sup>	7	.03 <sup>b</sup>	5	.01 <sup>b</sup>

**Note:**—MW indicates Mann-Whitney U values.

<sup>a</sup> Minutes are represented along the second row of the table.

<sup>b</sup> Significant.