Table E1: Summary of the published reports on the diagnostic accuracy of the commonly used tests for impingement syndrome
(Reproduced, with modification, from: Park HB, Yokota A, Gill HS, El Rassi G, McFarland EG. Diagnostic accuracy of clinical tests for the different degrees of subacromial impingement syndrome [supplemental material]. J Bone Joint Surg Am. 2005;87:1446-55.)

Study	Diagnosis	Diagnostic test	Sensitivity (%)	Specificity (%)	PPV* (%)	NPV† (%)	DA‡ (%)
Leroux et al.[42] (1995)	Impingement syndrome	Neer	89				
		Hawkins	87				
		Yocum	78				
Calis et al.[41] (2000)	Impingement syndrome	Neer	88.7	30.5	75.9	52.3	72
		Hawkins	92.1	25	75.2	56.2	72.8
		Horizontal adduction	82	27.7	73.7	38.4	66.4
		Speed	68.5	55.5	79.2	41.6	64.8
		Yergason	37	86.1	86.8	35.6	51.2
		Painful arc	32.5	80.5	80.5	32.5	46.4
		Drop arm	7.8	97.2	87.5	29.9	33.6
MacDonald et al.[39] (2000)	Bursitis	Neer	75	47.5	36	82.9	
		Hawkins	91.7	44.3	39.3	93.1	
		Neer or Hawkins	95.8	41	39	96	
		Neer and Hawkins	70.8	50.8	36.2	81.6	
	Rotator cuff pathosis	Neer	83.3	50.8	40	88.6	
		Hawkins	87.5	42.6	37.5	89.7	
		Neer or Hawkins	87.5	37.7	35.6	88.5	
		Neer and Hawkins	83.3	55.7	42.6	55.7	
	Bursitis or Rotator cuff tear	Neer	77.0	62.5	70.0	71.4	
		Hawkins	88.9	60.0	71.4	82.8	
Naredo et al.[40] (2002)	Supraspinatus lesion	Physical examination	79.3	50	95.8	14.2	
	Supraspinatus tendinitis	Physical examination	72.2	38.4	61.9	50.0	
	Supraspinatus tear	Physical examination	18.7	100	100	53.5	
	Infraspinatus lesion	Physical examination	70.5	90	85.7	70.5	
	Infraspinatus tendinitis	Physical examination	57.1	70.8	36.3	85	
	Infraspinatus tear	Physical examination	36.3	95	80	73	
	Subscapularis lesion	Physical examination	50	84.2	66.6	72.7	
	Subscapularis tendinitis	Physical examination	50	88	50	88	
	Subscapularis tear	Physical examination	50	95.4	75	87.5	
	Biceps tendinitis	Physical examination	73.6	58.3	73.6	58.3	
	Subacromial-subdeltoid bursitis	Physical examination	42.8	88.2	75	65.2	
	ACCL§ involvement	Physical examination	58.3	85.7	93.3	37.5	
	Impingement	Physical examination	65	72.7	81.2	53.3	
Holtby and Razmjou** (2004)	Supraspinatus tendinitis or partial rotator cuff tear	Supraspinatus test	62	54			
	Full thickness cuff tear		41	70			
	Large to massive cuff tear		88	70			

*PPV = positive predictive value; †NPV = negative predictive value; ‡DA = diagnostic accuracy; §ACCL = acromiocoracoclavicular; **Holtby R, Razmjou H. Validity of the supraspinatus test as a single clinical test in diagnosing patients with rotator cuff pathology. J Orthop Sports Phys Ther. 2004;34:194-200.

Table E2: The diagnostic values of the eight clinical tests for three different degrees of severity of rotator cuff disease in impingement syndrome (Reproduced from: Park HB, Yokota A, Gill HS, El Rassi G, McFarland EG. Diagnostic accuracy of clinical tests for the different degrees of subacromial impingement syndrome. J Bone Joint Surg Am. 2005;87:1452.)

TABLE III The Diagnostic Values of the Eight Clinical Tests for Three Different Degrees of Severity of Rotator Cuff Disease in Impingement Syndrome

Clinical Test by Group	Sensitivity *(%)*	Specificity *(%)*	Positive Predictive Value *(%)*	Negative Predictive Value *(%)*
Group 1 (bursitis)				
Neer sign	85.7	49.2	20.9	95.7
Hawkins-Kennedy sign	75.7	44.5	17.4	92.2
Painful arc sign	70.6	46.9	12.3	93.8
Supraspinatus muscle test	25.0	66.9	8.8	87.4
Speed test	33.3	69.8	14.1	87.6
Cross-body adduction test	25.4	79.7	14.9	88.5
Drop-arm test	13.6	77.3	8.0	86.0
Infraspinatus muscle test	25.0	68.9	9.4	87.7
Group 2 (partial-thickness rotator cuff tear)				
Neer sign	75.4	47.5	18.1	92.6
Hawkins-Kennedy sign	75.4	44.4	17.0	92.2
Painful arc sign	67.4	47.0	14.9	91.3
Supraspinatus muscle test	32.1	67.8	11.6	88.4
Speed test	33.3	70.6	16.1	88.8
Cross-body adduction test	16.7	78.5	9.9	86.9
Drop-arm test	14.3	77.5	8.0	86.8
Infraspinatus muscle test	19.4	69.1	10.1	87.7
Group 3 (full-thickness rotator cuff tear)				
Neer sign	59.3	47.2	41.3	64.9
Hawkins-Kennedy sign	68.7	48.3	45.2	71.2
Painful arc sign	75.8	61.8	61.0	76.4
Supraspinatus muscle test	52.6	82.4	68.0	71.0
Speed test	39.9	75.3	50.3	66.6
Cross-body adduction test	23.4	80.8	44.6	61.5
Drop-arm test	34.9	87.5	65.0	66.8
Infraspinatus muscle test	50.5	84.0	69.1	70.5

TABLE III ***(continued)***

Overall Accuracy *(%)*	Pretest Probability	Pretest Odds	Likelihood Ratio	Post-Test Odds	Post-Test Probability
54.2	0.13	0.15	1.69	0.25	0.20
48.7	0.13	0.15	1.36	0.20	0.17
49.2	0.13	0.15	1.33	0.20	0.17
62.1	0.13	0.15	0.76	0.11	0.10
65.1	0.13	0.15	1.10	0.17	0.15
73.1	0.13	0.15	1.25	0.19	0.16
69.2	0.13	0.15	0.60	0.09	0.08
63.9	0.13	0.15	0.80	0.12	0.11
51.3	0.13	0.15	1.44	0.22	0.18
48.5	0.13	0.15	1.36	0.20	0.17
49.4	0.13	0.15	1.27	0.19	0.16
63.7	0.13	0.15	1.00	0.15	0.13
66.5	0.13	0.15	1.13	0.17	0.15
70.8	0.13	0.15	0.78	0.12	0.11
69.9	0.13	0.15	0.64	0.10	0.09
64.1	0.13	0.15	0.63	0.10	0.09
51.8	0.41	0.69	1.12	0.77	0.44
56.1	0.41	0.69	1.33	0.92	0.50
68.0	0.41	0.69	1.98	1.37	0.58
70.0	0.41	0.69	3.00	2.07	0.67
61.6	0.41	0.69	1.62	1.12	0.53
58.0	0.41	0.69	1.22	0.84	0.46
66.5	0.41	0.69	2.79	1.93	0.66
70.1	0.41	0.69	3.16	2.18	0.69

Table E3: Post-test probabilities for rotator cuff tear in different age-groups
(Reproduced, with permission, from: Murrell GA, Walton JR. Diagnosis of rotator cuff tears. Lancet. 2001;357:769-70.)

Number of positive diagnostic features*	Age group (years)	Number of patients with rotator cuff tear	Number of patients with no tear	Post-test probability† (95% CI)‡
All 3	Any	48 (24%)	1 (0·5%)	0·98 (0·89–1·00)
Any 2	<60	26 (13%)	14 (7%)	0·64 (0·47–0·79)
Any 2	⩾60	48 (24%)	1 (0·5%)	0·98 (0·89–1·00)
Any 1	<40	3 (1·5%)	22 (11%)	0·12 (0·25–0·31)
Any 1	40–69	52 (26%)	60 (30%)	0·45 (0·36–0·55)
Any 1	⩾70	22 (11%)	6 (3%)	0·76 (0·56–0·90)
None	Any	1 (0·5%)	96 (48%)	0·05 (0·02–0·11)

*Supraspinatus weakness, weakness in external rotation, and positive impingement sign or signs. †Age-adjusted. ‡Approximation based on a fixed total count and an *F* distribution.

Table E4: The likelihood ratios and the post-test probabilities for combining clinical tests according to logistic regression analysis results

(Reproduced from: Park HB, Yokota A, Gill HS, El Rassi G, McFarland EG. Diagnostic accuracy of clinical tests for the different degrees of subacromial impingement syndrome. J Bone Joint Surg Am. 2005;87:1454.)

TABLE V The Likelihood Ratios and Post-Test Probabilities for Combining Clinical Tests According to Logistic Regression Analysis Results

Category	No. (%) of Patients with Positive Test Results		Pretest Probability	Pretest Odds	Likelihood Ratio	Post-Test Odds	Post-Test Probability
	Subject	Control					
Overall impingement syndrome*							
All three tests positive	61/231 (26.4)	3/121 (2.5)	0.65	1.86	10.56	19.64	0.95
Two of three tests positive	86/231 (37.2)	9/121 (7.4)	0.65	1.86	5.03	9.36	0.90
One of three tests positive	60/231 (26.0)	35/121 (28.9)	0.65	1.86	0.90	1.67	0.63
None of three tests positive	24/231 (10.4)	74/121 (61.2)	0.65	1.86	0.17	0.32	0.24
Full-thickness rotator cuff tear†							
All three tests positive	50/153 (32.7)	4/195 (2.1)	0.39	0.64	15.57	9.96	0.91
Two of three tests positive	53/153 (34.6)	19/195 (9.7)	0.39	0.64	3.57	2.28	0.69
One of three tests positive	36/153 (23.5)	58/195 (29.7)	0.39	0.64	0.79	0.51	0.33
None of three tests positive	14/153 (9.2)	114/195 (58.5)	0.39	0.64	0.16	0.10	0.09

*A total of 352 patients (231 in the subject group and 121 in the control group) who underwent all three tests (the Hawkins-Kennedy impingement sign, the painful arc sign, and the infraspinatus muscle test) were included in this analysis. The subject group included patients with bursitis, partial-thickness rotator cuff tear, or full-thickness rotator cuff tear; the control group was the nonimpingement group. †A total of 348 patients (153 in the subject group and 195 in the control group) who underwent all three tests (the painful arc sign, drop-arm sign, and the infraspinatus test) were included in this analysis. The subject group included patients with a full-thickness rotator cuff tear only; the control group included patients without impingement and patients with bursitis or a partial-thickness rotator cuff tear.

Table E5: Sensitivity and Specificity Data for Physical Examination Tests with 81 Type II SLAP Lesions by Location Subtype

(Reproduced, with permission, from: **Morgan CD, Burkhart SS, Palmeri M, Gillespie M.** Type II SLAP lesions: three subtypes and their relationships to superior instability and rotator cuff tears. *Arthroscopy.* 1998;14:553-65.)

	Anterior Lesions		Posterior Lesions		Combined Lesions	
Test	Sensitivity	Specificity	Sensitivity	Specificity	Sensitivity	Specificity
Jobe	0.04	0.27	0.85	0.68	0.59	0.54
Speed	1.00	0.70	0.29	0.11	0.78	0.37
Bicipital groove pain	1.00	0.47	0.32	0.13	0.74	0.35
O'Brien	0.88	0.42	0.32	0.13	0.85	0.41

Table E6: Review of Reported Diagnostic Accuracy for SLAP Lesions[a]

Tests	Study	Lesion	Sensitivity	Specificity	PPV[b]	NPV	DV
Compression rotation test	Snyder et al. (1990)	SLAP	22				86
	Holovacs et al. (2000)	Glenoid labral tear	80	19			
	McFarland et al. (2002)	SLAP	24	76	9	90	71
Anterior slide test	Kibler (1995)	Superior labral tear	78	92	84	87	
	McFarland et al. (2002)	SLAP	8	84	5	90	77
Active compression test	O'Brien et al. (1998)	Superior labral tear	100	99	95	100	99
	Morgan et al. (1998)	Anterior Type II SLAP	88	42	42	88	57
		Posterior Type II SLAP	32	13	17	27	20
		Combined Type II SLAP	85	41	42	85	56
	McFarland et al. (2002)	SLAP	47	55	10	91	54
	Stenson and Templin (2002)	SLAP	67	41	60		
	Guance and Quick (2000)	SLAP	50	50			
	Holovacs et al. (2000)		69	50			
	Parentis et al. (2002)	SLAP (Type II)	65				
Biceps load test I	Kim et al. (1999)	SLAP (Type II)	90.9	96.9	83	98	
Biceps load test II	Kim et al. (2001)	SLAP	90	92		95	
Crank test	Liu et al. (1996)	Glenoid labral tear	91	93	94	90	
	Mimori et al. (1999)	SLAP	83	100			

[a]From: Holovacs TF, Osbahr D, Singh H, Speer KP: The sensitivity and specificity of the physical examination to detect glenoid labrum tears. Presented at the specialty day meeting of the American Shoulder and Elbow Society; March 2000; Orlando, FL. Unpublished data.

[b]PPV, positive predictive value, NPV, negative predictive value, DV, diagnostic value.

Table E7: The Value of Three Tests in Diagnosing SLAP Lesions

(Reproduced, with permission, from: McFarland EG, Kim TK, Savino RM. *Clinical Assessment of Three Common Tests for Superior Labral Anterior-Posterior Lesions.* Am J Sports Med. 2002;30:810-5, Table III.)

Diagnostic test	Positive tests[a]				Diagnostic value[b]									
	Control group		SLAP lesion group		Sensitivity		Specificity		PPV		NPV		DA	
	%	(*N*)	%	(*N*)	%	(*N*)	%	(*N*)	%	(*N*)	%	(*N*)	%	(*N*)
Compression rotation test	25	(67/274)	24	(7/29)	24	(7/29)	76	(207/274)	9	(7/74)	90	(207/229)	71	(214/303)
Anterior slide test	16	(62/381)	8	(3/38)	8	(3/38)	84	(319/381)	5	(3/65)	90	(319/354)	77	(322/419)
Active compression test	45	(168/371)	47	(18/38)	47	(18/38)	55	(203/371)	10	(18/186)	91	(203/223)	54	(221/409)

[a]There were no significant differences between groups in terms of the percentage of patients with positive tests.

[b]PPV, positive predictive value, NPV, negative predictive value, DA, diagnostic accuracy.