

Reference number as appears in main text	Author (year)	PEDro score	Participants	Diagnosis/ classification
29	Abrisham et al (2011)	9	N = 80; mean age = 51.7 years; proportion male = 30/80 (38%); mean duration of symptoms = not reported	Subacromial syndrome, defined by: Subacromial syndrome, defined by: Subacromial Shoulder pain +ve Neer, Hawkins-Kennedy, Jobe and Speed's test No imaging reported
	Akgun et al (2004)	8	N = 48; mean age = 48.8 years; proportion male = 15/48 (31%); mean duration of symptoms = 14.7 months	Subacromial impingement syndrome, defined by: Subacromial impingement syndrome, defined by: Subacromial impingement syndrome Unilateral shoulder pain + ve Neer, Hawkins-Kennedy test, Painful arc Normal x-ray
30	Aktas et al (2007)	8	46 participants, divided into 2 groups. Mean ages \pm SD in the two groups were 48.7 \pm 9.0 and 53.9 \pm 11.2,. 15 female-5 male patients in each group. 6 drop-outs.	Subacromial impingement syndrome, defined by: Subacromial impingement syndrome, defined by: Subacromial impingement syndrome unilateral shoulder pain + ve Neer, Hawkins-Kennedy test, painful arc, + ve injection test Normal x-ray, MRI consistent with impingement
31	Akyol et al (2012)	8	40 subjects, divided into 2 groups of 20. 30 female-10 male, age range 21-78 years.	Subacromial impingement syndrome, defined by: Subacromial impingement syndrome, defined by: Subacromial impingement syndrome Shoulder pain + ve Neer, Hawkins-Kennedy test, painful arc MRI consistent with impingement

32	Al Dajah (2014)	4	30 subjects, divided into 2 groups of 15. Ages 40-60	<p>Subacromial impingement syndrome, defined by: Subacromial impingement syndrome, defined by: Subacromial impingement syndrome, defined by:</p> <p>Shoulder pain VAS ≥ 5</p> <p>+ ve Neer, - ve capsule stretch test</p> <p>No imaging reported</p>
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33	Analan et al (2015)	6	22 patients (11 males, 11 females; age range, 52–81 years)	<p>Rotator cuff disease, defined by: Rotator unilateral shoulder pain</p> <p>+ ve results in the Speed, Neer, or Hawkins tests or the drop arm, lift-off, or supraspinatus isolation tests; a resistant, painful shoulder during internal and external rotation; or painful arc</p>
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34	Arias-Buria et al (2015)	7	N = 36; Divided into 2 groups. Mean age = 58 year. 3/4 Females	<p>MRI consistent with impingement</p> <p>Subacromial pain syndrome, defined by:</p> <p>Shoulder pain $\geq 3/12$</p> <p>VAS >4 on NPRS during arm elevation; at least one positive test of Hawkins-Kennedy test, Neer's sign, empty can test, drop arm, and lift-off test</p> <p>+ve rotator cuff / supraspinatus tendinopathy on MRI</p>
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36	Atya (2012)	6	40 subjects, divided into 2 groups of 19 (mean age = 48) and 21 (Mean age = 49)	<p>Subacromial impingement, defined by: Subacromial impingement, defined by: Subacromial impingement, defined by:</p> <p>superiolateral shoulder pain > 5 VAS</p> <p>+ ve Neer, Hawkins-Kennedy test, painful arc, pain or limitation with the functional movement patterns of hand- behind-back or hand-behind-head, pain with one of the following resistance tests: external rotation, internal rotation, abduction, or flexion</p> <p>No imaging reported</p>
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37	Aytar et al (2015)	7	N = 66, 51 females. Mean age = 52 years.	<p>Subacromial impingement syndrome, defined by: Subacromial impingement syndrome, defined by:</p> <p>Shoulder pain</p> <p>At least 3 of positive Neer test, positive Hawkins-Kennedy, positive painful arc, pain with palpation, pain with resisted isometric abduction, pain at the shoulder region.</p> <p>No imaging reported</p>
38	Bae et al (2011)	5	35 subject, divided into 2 groups of 17 & 18. 6 males in each group.	<p>Shoulder impingement syndrome, defined by: Shoulder impingement syndrome, defined by:</p> <p>Shoulder pain</p> <p>Painful arc of movement during flexion or abduction, positive Neer or Kennedy-Hawkins impingement signs, or pain on resisted lateral rotation, abduction or the</p> <p>No imaging reported</p>
39	Bal et al (2009)	7	N = 44, divided into 2 equal groups. 28 females. Age range = 18 - 70 years.	<p>Subacromial impingement syndrome, defined by: Subacromial impingement syndrome,</p> <p>Shoulder pain</p> <p>Positive Neer and Hawkins-Kennedy signs, and a positive subacromial injection test</p> <p>No imaging reported</p>
40	Bang & Deyle (2000)	6	N = 52. 32 males, 20 females. Age 24 – 65 years. Divided into 2 groups.	<p>Subacromial impingement syndrome, defined by: Subacromial impingement syndrome, defined by:</p> <p>Pain with 1 of these 2 tests: 1. Passive overpressure at full shoulder flexion with the scapula stabilized. 2. Passive internal rotation at 90 deg shoulder flexion in the scapular plane and in progressive degrees of horizontal adduction.</p>

				And pain with one test from: - Active shoulder abduction or Resisted Abduction or Internal rotation or External rotation. No imaging reported
42	Barbosa et al (2008)	3	N = 28. (50:50 M:F) Mean Age = 46.14	Tendinopathy of Supraspinatus or Biceps Brachii , defined by: Pain on palpation of the Supraspinatus or Biceps Brachii tendons +ve in tests for Supraspinatus (e.g Jobe Test) Biceps (e,g Speed Test or Yergason) No imaging reported
43	Baskurt et al (2006)	4	N = 92. Divided into 3 groups. Average age 56.9 years	Stage I Shoulder Impingement Syndrome , defined by: No defined
44	Baskurt et al (2011)	5	N = 40; mean age = 51 years; proportion male = 13/40 (33%); mean duration of symptoms = 10 months	No imaging reported Subacromial impingement syndrome, defined by: Shoulder pain +ve Neer, Hawkins-Kennedy, and Jobe's MRI; stage 1 or 2 SIS
45	Bateman & Adams (2014)	4	N = 11. 6 males, 5 females. Divided into 3 groups	Rotator cuff tendinopathy , defined by: Sufficient investigations that included clinical assessment X-ray and either diagnostic ultrasound or Magnetic Resonance Imaging to establish the diagnosis of rotator cuff tendinopathy
46	Beaudreuil et al (2011)	9	N = 70. Age greater than 30 and duration > 1 month. Age range 34 - 79	Impingement syndrome , defined by: Impingement syndrome , defined by: Impingement syndrome Shoulder pain

			duration of symptoms = 42.7 months	One +ve Neer, Hawkins-Kennedy, Jobe's test or pain with resisted external rotation/abduction, and painful arc No imaging reported
52	Cheng & Hung (2007)	5	N=103; mean age= 32 years; proportion male= 72/103 (70%) Mean duration of symptoms = not reported (>90 days following injury was stated)	Work-related rotator cuff disorder, defined by: Work-related rotator cuff disorder, Medical diagnosis with signs & symptoms of cuff disorder (criteria not specified) Severe tears that were requiring surgical intervention were excluded by no mention of how this was decided No imaging reported
53	Cift et al. (2015)	5	N=40; mean age= 46 years. Proportion male= 18/40 (45%). Mean duration of symptoms not reported	Subacromial syndrome , defined by: Subacromial Clinical sign of impingement: painful arc, Hawkins and/or Neers positive, MRI Excluded shoulder surg; full thickness cuff tear; hemiplegia; Fracture; ad.cap (restrict movement); prev injections within last 3 months; recent shoulder trauma MRI confirmed rotator cuff tendinitis or sub-acromial bursitis
54	Citaker et al (2005)	3	N = 40; mean age = 54.2 years; proportion male = not reported; mean duration of symptoms = not reported	Shoulder impingement syndrome , defined by: Shoulder impingement syndrome , defined by: Shoulder impingement syndrome , defined by: No detail regarding symptomatic presentation reported Patients with clinical and radiological evidence of impingement but no further No imaging reported
55	Cloke et al (2008)	5	N=112; mean age=55 years Proportion male= unknown Mean duration of symptoms not reported (< 6 month duration was stated)	Painful arc of the shoulder, defined by: Painful arc of the shoulder, defined by: Painful arc of the shoulder Painful arc 60-120 deg abduction; pain in area of deltoid insertion and lateral; ?Neers and Hawkins Kennedy.

				Two +ve Neer, Hawkins-Kennedy or Jobe's No imaging reported
60	Deveraeux et al (2016)	5	N = 100; mean age = 48 years; proportion male = 61/100 (61%); mean duration of symptoms = not reported	Subacromial impingement syndrome, defined by: Subacromial impingement syndrome, defined by Subacromial impingement syndrome, defined by Anterolateral shoulder pain + ve Hawkins-Kennedy test, Painful arc Imaging consistent with impingement; no further detail reported
61	Dickens et al (2005)	8	N=85; mean age=55; proportion male= 48 (56%). Mean duration of symptoms=	Subacromial impingement syndrome , defined by: Subacromial impingement syndrome , defined by Subacromial impingement syndrome, defined by Diagnosed by shoulder specialist surgeon based on clinical examination and history along with radiographic findings and diagnostic injections of anaesthetic. Exclusion included adhesive capsulitis or a clinically obvious rotator cuff tear, grade III sub-acromial spur (on x-ray) Plain film X-rays on all participants
62	Dilek et al (2016)	8	N = 61; mean age = 49 years; proportion male = 19/61 (31%); mean duration of symptoms = 17 months	Subacromial impingement syndrome , defined by: Subacromial impingement syndrome , defined by Subacromial impingement syndrome, defined by No symptom details reported +ve Neer or Hawkins-Kennedy test MRI diagnosis of SIS but no detail reported
63	Dogan et al (2010)	9	N = 52; mean age = 53.6 years; proportion male = 19/52 (37%); mean duration of symptoms = 13.5 months	Subacromial impingement syndrome , defined by: Subacromial impingement syndrome , defined by Subacromial impingement syndrome, defined by No symptom details reported No detail reported beyond 'detailed physical examination' MRI to exclude rotator cuff tear
64	Dogu et al (2012)	7	N = 46; mean age = 56 years; proportion male = 15/46 (33%); mean	Subacromial impingement syndrome , defined by: Subacromial impingement syndrome , defined by Subacromial impingement syndrome, defined by

			duration of symptoms = 8.5 months	Shoulder pain +ve Neer, Hawkins-Kennedy or Jobe's test MRI with +ve microstructural changes in the rotator cuff indicated or identification of acromial spur indicative of SIS
65	Ekeberg et al (2009)	10	N = 106; mean age = 50.5 years; proportion male = 41/106 (39%); mean duration of symptoms = unclear	Rotator cuff disease, defined by: Rotator Shoulder pain Pain on abduction, largely maintained range of movement, +ve Hawkins-Kennedy test Patients with radiological findings indicating glenohumeral joint pathology were excluded but no further detail reported
66	Ellegaard et al (2016)	7	N=99; mean age=49; proportion male= 42 (41%). Mean duration of symptoms= not reported (symptoms for more than 4/52)	Subacromial pain syndrome, defined by: US diagnosed impingement Exclusion included complete or partial rupture of sh muscles on US scan, capsular pattern of restriction, contraindications to interventions used in trial, previous shoulder US diagnosed enlarged bursa
66	Engebretsen et al (2009)	7	N = 104; mean age = 48 years; proportion male = 52 (50%); mean duration of symptoms = unclear	Subacromial pain syndrome, defined by: Shoulder pain Pain on abduction, normal passive range of movement, pain with isometric testing, +ve Hawkins-Kennedy test No imaging reported
67	Esmalian et al (2012)	7	N = 50; mean age = 50.2 years; proportion male = 24 (48%); mean duration of symptoms = not reported	Rotator cuff tendinitis, defined by: Rotator Shoulder pain Pain from two out of five tests: Painful arc, 'impingement' test, Hawkins-Kennedy test, palpation, 'supraspinatus' test No imaging reported

68	Eyigor et al (2010a) *NOTE* incorrectly listed as Kormaz et al (2010)	6	N = 40; mean age = 59.2 years; proportion male = 11 (28%); mean duration of symptoms = 8.8 months	Rotator cuff tendinitis , defined by: Shoulder pain No detail reported in relation to physical examination Rotator cuff pathology detected on USS but no further detail reported
69	Galace de Freitas et al (2014)	9	N = 56; mean age = 50.5 years; proportion male = 20 (36%); mean duration of symptoms = 21.6 months	Subacromial impingement syndrome , defined by: Shoulder pain Maintained range of movement and +ve Neer's test SIS identified by USS or MRI according to Neer's criteria (stage I or II)
70	Galasso et al (2012)	7	N = 20; mean age = 50.9 years; proportion male = 11 (55%); mean duration of symptoms = 53.3 months	Supraspinatus tendinopathy , defined by: Shoulder pain +ve Full can or Jobe's test MRI demonstrating intact tendon and diffuse mildly increased signal intensity
71	Garcia et al (2016)	7	N = 88; mean age = 52.2 years; proportion male = 31 (35%); mean duration of symptoms = unclear	Impingement syndrome, defined by: Shoulder pain +ve Neer, Hawkins-Kennedy test, painful arc, pain on palpation, pain with isometric Calcification excluded by x-ray
72	Garrido et al (2016)	5	N = 68. Mean age 33.4 years. Divided in to 2 different groups	Impingement syndrome , defined by: Impingement syndrome , defined by: Compatible clinical symptoms of more than 3 months progression Unilateral injury No imaging reported
73	Giombini et al (2006)	7	N = 37; mean age = 26.7 years; proportion male = 29 (78%); mean duration of symptoms = unclear	Supraspinatus tendinopathy , defined by: Shoulder pain

			duration of symptoms = unclear	+ve Hawkins-Kennedy and Empty-can test USS demonstrating intact tendon and non-homogeneous increased signal intensity
74	Granviken & Vasseljen (2015)	8	N = 46; mean age = 47.9 years; proportion male = 24 (52%); mean duration of symptoms = 14.5 months	Subacromial impingement , defined by: Shoulder pain +ve Hawkins-Kennedy test. Painful arc and pain with resisted external rotation Patients with labrum pathology on imaging were excluded but no further detail reported
79	Haik et al (2014)	4	N=50; mean age= not reported approx. 32; proportion male= 32 (64%). Mean duration of symptoms= 45 months	Shoulder impingement , defined by: Shoulder Diagnosis included at least 3 of the following: Neers, Hawkins, Jobe, pain on passive or isometric lateral rotation, pain on active shoulder elevation, pain with palpation of rotator cuff, pain in the C5 or C6 Excluded if had fracture, osteoporosis, malignancy, infection, active inflammatory process, pregnant, systemic illness, signs of complete rotator cuff tear or acute inflammation, GH instability, previous fracture or surgery No imaging reported
83	Holmgren et al (2012)	8	N=102; mean age= 52; proportion male= 66 (65%). Mean duration of symptoms not stated (symptoms for more than 12).	Subacromial impingement syndrome , defined by: Subacromial impingement syndrome , defined by: Diagnosis based on 3 of the 5 tests being positive: Hawkins, Neer, Jobe's, Patte's manoeuvre. Positive response to steroid injection Excluded if had malignancy, OA Gh, os acromiale, AC OA, prev #s of shoulder, prev surgery shoulder, polyarthritis, RA, fibromyalgia, instability, frozen shoulder,

				?XR- unclear
86	Hoyek et al (2014)	4	N = 16; mean age = 46.3 years; proportion male = 8/16 (50%); mean duration of symptoms = not reported	Shoulder impingement syndrome, defined by: Stage II shoulder impingement classified following an examination Clinical testing not detailed No imaging reported
91	Johansson et al (2005)	8	N=85; mean age= 49; proportion male= 26/85 (31%). Mean duration of symptoms= not reported (all had symptoms for >2/12)	Impingement syndrome , defined by: Positive Hawkins-kennedy sign, Jobe supraspinatus test, Neers sign and painful arc in abduction 60-120 Radiology imaging. Excluded radiology findings of malignancy, GH OA, bony spurs and osteophytes decreasing SA space, polyarthritis, fibromyalgia, prev fractures, instability, frozen shoulder, ruptured rotator cuff (pronounced weakness and atrophy), acute bursitis
92	Johansson et al (2011)	7	N = 91; mean age = 50.5 years; proportion male = 39 (43%); mean duration of symptoms unclear	Subacromial impingement , defined by: Shoulder pain +ve Hawkins-Kennedy, Jobe and Neer Impingement tests with painful arc during active abduction. No imaging reported
94	Kachingwe et al (2008)	5	5/10 N = 33. Males = 17, Female = 16. Age range = 18 – 74. Mean 46.4 years. Divided in to 4 groups	Shoulder impingement , defined by: Superiolateral shoulder pain

years. Divided into 4 groups

Two out of four specified objective signs and symptoms: a positive (painful) Neer impingement test, a positive (painful) Hawkins-Kennedy impingement test, painful limitation of active shoulder elevation (flexion, abduction, scaption), and pain or limitation with the functional movement patterns of hand-behind-back or hand-behind-head

95	Kardouni et al (2015) <i>JOSPT</i>	7	N = 52; mean age = 32 years; proportion male = 28 (54%); mean duration of symptoms = 38 months	<p>Subacromial impingement, defined by:</p> <p>Shoulder pain</p> <p>Pain from three out of five tests: Painful arc, Hawkins-Kennedy test Neer Impingement test, Jobe's test, resisted external rotation</p> <p>No imaging reported</p>
100	Kaya et al (2014)	7	60 participants between 30 and 60 years old, divided into 2 groups of n = 30.	<p>Shoulder impingement syndrome, defined by:</p> <p>Not specified</p> <p>SIS Assessment form including pain severity, shoulder range of motion, shoulder muscle strength, Neer painful arc, Hawkins-Kennedy, sulcus sign, and apprehension tests for instability. The combination of the Hawkins-Kennedy impingement sign, the painful arc sign, and the infraspinatus muscle test was used to diagnose</p> <p>- ve for massive rotator cuff or labral tears on MRI</p>
102	Kelle & Kozanoglu (2014)	4	N = 135. Male 30 / Female 105. Age range 18 - 77 years. Divided into 3 groups.	Subacromial impingement syndrome, defined by:

				Neer, Hawkins-Kennedy and Empty Can tests +ve, +ve MRI findings for stage I or II subacromial impingement syndrome
103	Kolk et al (2013)	7	N = 82. Male 25 / Female 57. Mean age 47 years. Divided in to 2 different groups	Chronic Rotator Cuff tendinitis , defined by: Symptoms longer than 6/12 +ve painful arc and a positive empty can test XR and USS to exclude other pathologies
106	Kromer et al (2013)	7	N=90; mean age=52 years. Proportion male= 44 (49%) Mean duration of symptoms = 34 weeks	Shoulder impingement , defined by: Complaints in the GH region or proximal arm; presence of at least one of the following: Neers; Hawkins; painful arc; pain on resistance test of the cuff Excluded high pain (>8/10); scap-thoracic dysfunction; shoulder instab; ad.cap; more than one third movement restriction; substantial shoulder weakness or loss of function; neuro involvement; diabetes; psychotherapeutic drugs; compensation claims No imaging reported
107	Kromer et al (2010)	7	N = 90. Age range 18 - 75 years. Divided in to 2 different groups	Shoulder impingement syndrome , defined by: presence of one of the following signs: Neer impingement test, Hawkins-Kennedy impingement test, painful arc with active abduction or flexion, and pain with one of the following resistance tests: external rotation, internal rotation, abduction, or flexion. No imaging reported
108	Kumar et al (2012)	4	N = 52. Male 36 / Female 16. Mean age 36.2 years. Divided in to 2	Subacromial impingement syndrome, defined by:

different groups

uni- lateral shoulder pain of more than 1 week localized (anterior and/or anterolateral) to the acromion and pain produced or increased during flexion and/or abduction of the symptomatic shoulder and at least any four of the following: Positive Neer impingement sign, Positive Hawkins sign, Pain reproduced during supraspinatus empty can test, Painful arc of movement between 60° to 120°, Pain with palpation on the greater tuberosity of the humerus.

In some cases, radiological investigation and CT scan was supplemented

109	Kurtais Gursel et al (2004)	6	N = 38. Male 12 / Female 26. Age range 35 – 69 years. Divided in to 2 different groups	<p>Soft tissue disorder of the shoulder, defined by:</p> <p>Shoulder pain and limitation of movement for at least 4 weeks</p> <p>Diagnosed by USS or MRI</p>
110	Lewis et al (2005)	5	N = 60; mean age = 48.9 years; proportion male = 35/60 (58%); mean duration of symptoms = 14 months	<p>Subacromial impingement syndrome, defined by: Subacromial impingement syndrome, defined by:</p> <p>Unilateral shoulder pain</p> <p>Pain with flexion and/ or abduction, + ve Neer, Hawkins-Kennedy, empty can test, painful arc, pain with palpation</p> <p>No imaging reported</p>
111	Littlewood et al (2015)	6	N = 86. Age range 23 – 83 years. Divided in to 2 groups	<p>Rotator cuff tendinopathy, defined by: Rotator cuff</p> <p>Shoulder pain</p>

				Primary complaint of shoulder pain, no / minimal resting pain, range of shoulder movement largely preserved, shoulder pain provoked with resisted muscle tests, usually abduction or lateral rotation
				No imaging reported
112	Littlewood et al (2014)	6	N = 24. Male : female 50:50. Age range = 44 – 79 years. Divided in to 2 groups	Rotator cuff tendinopathy , defined by: Rotator cuff tendinopathy , defined by: Shoulder pain Primary complaint of shoulder pain, no / minimal resting pain, range of shoulder movement largely preserved, shoulder pain provoked with resisted muscle tests, usually abduction or lateral rotation No imaging reported
113	Lombardi et al (2008)	8	N = 60. Divided in to 2 groups	Shoulder Impingement Syndrome , defined by: Shoulder Impingement Syndrome , defined by: Painful arc +ve Neer test and Hawkin test No imaging reported
114	Ludewig & Borstad (2003)	6	N = 67; mean age = 49 years; proportion male = 67 (100%); mean duration of symptoms = not reported	Impingement syndrome , defined by: Shoulder pain Pain from two out of five impingement tests: Hawkins-Kennedy, Neer, Jobe, Yocum and/ or Speed's test, and pain reproduction from two out three further tests: painful arc, tenderness to palpation, resisted muscle testing No imaging reported
115	Maenhout (2013)	6	Sixty-one patients, divided into 2 groups (n = 30, mean age = 39.4 +/- 13.1 years and n = 31, mean age =	Subacromial syndrome , defined by: Unilateral anterolateral shoulder pain

			10.1 years and n = 31, mean age = 40.2 +/- 12.9 years	<p>Painful arc, 2 out of 3 impingement tests +ve (Hawkins, Jobe and/or Neer), 2 out of 4 resistance tests painful (full can (thumb up) abduction at 90 degrees, resisted abduction at 0 degrees, resisted external or internal rotation with the arm adducted) and pain with palpation of the supraspinatus and/or infraspinatus tendon insertion</p> <p>- ve for partial or full rotator cuff tears on MRI or US</p>
117	Martins & Marziale (2012)	6	N = 16; mean age = unclear; proportion male = 2 (12.5%); mean duration of symptoms = unclear	<p>Rotator cuff disorder, defined by:</p> <p>Medical diagnosis of rotator cuff disorder but no further detail reported</p>
118	Marzetti et al (2014)	7	N = 48; mean age = 62.1 years; proportion male = 21 (44%); mean duration of symptoms = not reported	<p>No imaging reported</p> <p>Shoulder impingement syndrome, defined by:</p> <p>Shoulder pain</p> <p>+ve Hawkins-Kennedy and Neer</p> <p>Impingement tests with pain also during resisted muscle testing</p> <p>Use of MRI and radiographs to diagnose SIS according to Neer's criteria (stage I)</p>
12	McClatchie et al (2009)	6	Twenty-one subjects (14 females, 7 males) with an average age of 49.8 (+/- 9.8) years	<p>Shoulder pain, defined by:</p> <p>Unilateral shoulder pain of at least 6/52</p> <p>Painful arc with shoulder abduction</p> <p>Xray to exclude OA</p>
9	Michener et al (2015)	9	N = 56. Average age = 31.7. Divided in to 2 groups.	<p>Subacromial impingement syndrome, defined by:</p>

				positive on 3 of 5 tests of the clinical examination for subacromial impingement syndrome: 1) Hawkins test, 2) Neer test, 3) pain arc test, 4) Jobe/Empty Can test - pain or weakness, 5) resisted shoulder external rotation test - pain or weakness
				No imaging reported
120	Miller and Osmotherly (2009)	6	N = 22. Age range = 45 – 67. Divided in to 2 groups.	<p>Shoulder impingement syndrome, defined by:</p> <p>Unilateral shoulder pain</p> <p>Each participant's pain was reproduced using the shoulder impingement test described by Hawkins and Kennedy</p> <p>No imaging reported</p>
123	Moezy et al (2014)	6	N = 68. Mean Age = 48. Divided in to 2 groups.	<p>Shoulder impingement syndrome, defined by:</p> <p>Unilateral shoulder pain</p> <p>Tenderness to palpation of the rotator cuff tendons; - Positive impingement tests, which included the Hawkins, Neer, and Empty can tests) or a painful arc of movement (60°–120°) Pain produced or increased during flexion and/or abduction of the symptomatic shoulder</p> <p>No imaging reported</p>
124	Montes-Molina et al (2012) <i>Clinical Rehab</i>	8	N = 30; mean age = 59.1 years; proportion male = 8/30 (27%); mean duration of symptoms = not reported	<p>Shoulder tendinopathy, defined by:</p> <p>Unilateral shoulder pain</p> <p>Clinical testing not detailed</p> <p>Ultrasonography, MRI or x-ray used to identify rotator cuff tendinitis, calcific tendinitis, or partial rotator cuff tear</p>

126	Mulligan et al (2016)	5	N = 40. 26 women and 14 men, aged 30-74 (mean 51.1 years). Divided in to 2 groups.	<p>Subacromial impingement syndrome, defined by:</p> <ul style="list-style-type: none"> - primary pain complaint in the shoulder and/or upper arm - presence of at least two of the following findings: painful arc, weakness in external rotation, positive impingement sign (Hawkins-Kennedy or Neer/Walsh tests), pain and/or weakness with resistance to internal rotation, external rotation, or scapular plane elevation. <p>Radiological imaging and periodic MRI evaluation supplemented the diagnosis.</p>
27	Munday et al (2007) *NOTE* Incorrectly listed as Brantingham et al 2007	5	N = 30; mean age = 22.5 years; proportion male = 16/30 (53%); mean duration of symptoms = 22.7 months	<p>Shoulder impingement syndrome, defined by:</p> <p>Shoulder pain</p> <p>Painful arc, +ve Neer, Hawkins-Kennedy test</p> <p>No imaging reported</p>
131	Osteras et al (2009)	6	N = 56; mean age = 44 years; proportion male = unclear; mean duration of symptoms = 40 months	<p>Shoulder impingement syndrome, defined by:</p> <p>Shoulder pain</p> <p>+ve Hawkins-Kennedy test</p> <p>No imaging reported</p>
132	Otadi et al (2012)	8	N = 42. All female. Mean age = 49 years. Divided in to 2 groups.	<p>Shoulder tendonitis, defined by:</p> <p>Local pain in supraspinatus and /or long head of biceps tendons - painful arc in abduction movement, pain in isometric resistance and passive stretch in supraspinatus and biceps - tenderness over the involved tendons and positive speed's sign or impingement test</p>

				MRIs and/or CT Scans were used as additional diagnostic tools.
134	Pekyavas & Baltaci (2016)	6	N = 70. Mean age 47.1 years. Divided in to 4 groups	Subacromial impingement syndrome, defined by: Shoulder pain Diagnosed with Subacromial Impingement Syndrome but no detail on what criteria No imaging reported
135	Perez-Merino et al (2016)	5	N = 99. Mean age = 54 years. Male = 42, female 57. Divided in to 3 groups.	Subacromial impingement syndrome, defined by: Shoulder pain Diagnosed by ultrasound scanning with rotator cuff tendinitis or tendinosis, or partial tear of the rotator cuff and/or of the brachial plexus Diagnosis confirmed by ultrasonography
137	Polimeni et al (2003)	2	N = 50; mean age = 56 years; proportion male = 14/50 (28%); mean duration of symptoms = not reported	Painful shoulder syndrome, defined by: Shoulder pain +ve Yocum, Jobe, 'Impingement', or Yergason test Ultrasonography used to report normal cuff, tendonitis, or rupture. X-ray to identify presence of osteophytes and acromial
138	Rabini et al (2012)	8	N = 92. Males = 31, Females = 61. Divided in to 2 groups.	Rotator cuff tendinopathy , defined by: Clinical examination, including 3 isometric tests (abdn at 0 and 30 deg, IR and ER) and +ve Kennedy-Hawkins sign X-ray of the affected shoulder in anteroposterior, axillary, and outlet views, confirmation by MRI
139	Razavi, M &	4	N = 33. Males = 21, Females = 12.	Rotator cuff tendinitis , defined by:

	Jansen, G (2004)		Age range = 27 – 77. Divided Into 2 groups.	<p>Pain on palpation, isometric testing and passive stretching in at least one of the rotator cuff muscles.</p> <p>MRI or XR that indicated other painful conditions in the shoulder.</p>
140	Rhon et al (2014)	8	104 patients aged 18 to 65 years	<p>Shoulder impingement Syndrome, defined by: Shoulder impingement Syndrome, defined by:</p> <p>Unilateral shoulder pain</p> <p>No detail reported in relation to physical examination</p> <p>No imaging reported</p>
144	Santamato et al (2009)	8	N = 70. Males = 28, Females = 42. Mean age = 54.1 years.	<p>Subacromial impingement syndrome, defined by: Subacromial impingement syndrome, defined by:</p> <p>Presence of shoulder pain</p> <p>Pain on abduction of the shoulder with a painful arch, a positive impingement sign (Hawkins sign), and a positive impingement test (relief of pain within 15 minutes after the injection of a local anesthetic [bupivacaine, 5 mL]) into the subacromial space).</p> <p>Radiology included ultrasonography or magnetic resonance imaging of the shoulder to confirm the diagnosis of stage I or 1</p>
143	Santamato et al (2016)	7	N = 30. Males = 16, Females = 14. Mean age = 40.2 years.	<p>Subacromial impingement syndrome, defined by: Subacromial impingement syndrome, defined by:</p> <p>Presence of unilateral shoulder pain,</p>

				<p>Pain on abduction of the shoulder with painful arc, a positive impingement sign (Hawkins sign), and a positive impingement test (relief of pain within 15 minutes after injection of local anesthetic [bupivacaine 5 mL] into the subacromial space).</p> <p>Radiography included ultrasonography, or magnetic resonance imaging (MRI) of the shoulder</p>
146	Saunders (2003)	2	N = 36, divided into 3 equal groups.	<p>Supraspinatus tendinosis, defined by:</p> <p>Not defined</p> <p>Empty can test, full PROM required for</p> <p>No imaging reported</p>
147	Schmitt et al (2001)	8	N = 40. Mean age = 52. Divided in to 2 groups	<p>Supraspinatus tendinopathy, defined by:</p> <p>Clinical diagnosis of chronic tendinitis of supraspinatus. No further detail given to how this was achieved.</p> <p>No imaging reported</p>
151	Senbursa et al (2007)	4	N = 30; mean age = 48.8 years; proportion male = not reported; mean duration of symptoms = not reported	<p>Shoulder impingement syndrome, defined by:</p> <p>Shoulder pain</p> <p>+ve Neer test, marked loss of shoulder movement or painful shoulder movement (frozen shoulder excluded)</p> <p>MRI used but no further detail reported</p>
150	Senbursa et al (2011)	5	N = 77. Age range = 35 - 55 . Divided in to 3 groups.	<p>Supraspinatus tendinopathy +/- Subacromial Impingement Syndrome, defined by:</p> <p>Clinical examination</p> <p>MRI</p>

152	Shakeri et al (2013)	6	N = 30. Mean age = 46.6. Divided in to 2 groups.	<p>Subacromial impingement syndrome, defined by:</p> <p>Confirmed by positive on two or more shoulder impingement screening items, and tested positive on at least one of the specific subacromial impingement tests. The shoulder impingement screening items included: a history of proximal anterior or lateral shoulder pain that had continued for more than one week during the last six months prior to study; a painful arc sign during active shoulder elevation; tenderness to rotator cuff tendon palpation; pain with resisted isometric shoulder abduction; positive Jobe's test (empty can test). Specific subacromial impingement tests used in the present study included the Neer sign, the Hawkins sign, and the Yocum test. No imaging reported</p>
153	Simsek et al (2013)	5	N = 38, Females 25, Males 13. Mean age 51. Age range 18 to 69 years. Divided in to 2 groups	<p>Subacromial impingement syndrome, defined by:</p> <p>Shoulder pain +ve Neer and Hawkins tests X-ray, MRI</p>
154	Speed et al (2002)	5	N = 74; mean age = 52.5 years; proportion male = 31/74 (42%); mean duration of symptoms = 23.3 months	<p>Rotator cuff tendonitis, defined by:</p> <p>Shoulder pain Painful arc, no muscle weakness No imaging reported</p>
155	Struyf et al (2013)	7	N = 22. Divided in to 2 groups.	<p>Shoulder impingement syndrome, defined by:</p>

				2 out of 3 +ve Hawkins, Neer, and Jobe. -ve Apprehension test and -ve Full can test, -ve Speeds and O'Briens test for biceps No imaging reported
156	Subasi et al (2012)	4	N = 57 patients (70 shoulders).	Shoulder impingement syndrome, defined by: +ve tests such as Neer', Hawkins, painful arc, supraspinatus, drop-arm, Yergasons, Speeds test and 50% improvement following subacromial injection XR and MRI used as required
157	Subasi et al (2016)	5	N = 70. Female 47, Male 23. Divided in to 2 groups	Subacromial impingement syndrome, defined by: - one or more positive results for specific tests such as Neer's, Hawkins, painful arc, supraspinatus and 0° abduction, or supraspinatus lesion revealed by radiological imaging were diagnosed as SIS. MRI and XR were utilised for exclusion and inclusion
165	Thelen et al (2008)	9	N = 42, divided into 2 equal groups. Age range = 18 -24 years.	Shoulder pain , as defined by: Shoulder pain Shoulder pain pain onset prior to 150° of active shoulder elevation in any plane, positive empty can test, positive Hawkins-Kennedy test No imaging reported
169	Vas et al (2008)	8	N = 425, divided into 2 groups of N = 205 and N = 220. 307 females, mean age = 55.7	Subacromial syndrome , defined by: Subacromial syndrome as defined by: Not specified Not specified

				X-ray to exclude other pathologies
170	Walther et al (2004) – *NOTE* incorrectly listed as Gohlke (2004)	3	N = 60; mean age = 50.7 years; proportion male = 34 (56%); mean duration of symptoms = 27.3 months	Subacromial impingement syndrome, defined by: Subacromial impingement syndrome, defined by: Shoulder pain +ve Neer test Use of USS and radiographs to diagnose SIS according to Neer's criteria (stage I or II)
173	Yavuz et al (2014)	7	Thirty one patients (17 males, 14 females) with a mean age of 44.45 ± 12.25 years. Subjects divided into 2 groups (n =16 and 15)	Shoulder impingement syndrome, defined by: Shoulder impingement syndrome, Unilateral shoulder pain with abduction painful arc and presence of +ve impingement signs (Hawkins and Neer tests) with + ve impingement test (subacromial injection of anesthetic) MRI consistent with impingement but - ve for rotator cuff tear
174	Yeldan et al (2009)	7	N = 60. 13 males, 47 females. Divided into 2 groups	Subacromial impingement syndrome, defined by: Demonstrate at least 3 of the following: (1) a positive Neer test, (2) a positive Hawkin's test, (3) pain with active shoulder elevation, (4) pain with isometric resisted abduction No imaging reported
175	Yiasemides et al (2011)	8	N = 98, divided into 2 groups of N = 51 and N =47. 51 females	Shoulder pain , as defined by: Shoulder pain Painful active flexion or abduction. Pain, tenderness, or restriction during passive accessory movements at the glenohumeral, acromioclavicular, or sternoclavicular joint or during passive scapular movements

176	No imaging reported		
	Yildirim et al (2013)	4	N = 100. Average age = 54.99. Divided in to 2 groups.
	Subacromial impingement syndrome, defined by: Clinical diagnostic tests, including the Neer, Hawkins, painful arc, drop arm, Yergeson, Jobe and supraspinatus tests, were MRI and XR was performed to both include and exclude from the study		
	Mean	6.22	
	SD	1.68	
	Median	6	
	Range	2 to 10	

Method of excluding cervical spine involvement	Category of cervical spine exclusion	Reviewer
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No detail reported	1. No method of exclusion undertaken or reported	Chris
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Presence of cervical pain but no further detail reported	2. Localized cervical spine symptoms and/or radiculopathy	Tom
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Examination of cervical spine; no further detail given	3a. Cervical examination; unspecified	Tom
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Signs and symptoms suggestive of cervical disorders but no further detail reported	2. Localized cervical spine symptoms and/or radiculopathy	Tom
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No detail reported	1. No method of exclusion undertaken or reported	Tom
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Signs and symptoms suggestive of cervical disorders but no further detail reported	2. Localized cervical spine symptoms and/or radiculopathy	Tom
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Signs and symptoms suggestive of cervical radiculopathy but no further detail reported	2. Localized cervical spine symptoms and/or radiculopathy	Greg
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Signs and symptoms suggestive of cervical radiculopathy but no further detail reported	2. Localized cervical spine symptoms and/or radiculopathy	Tom
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Positive Spurling test,
dermatomal light touch
deficits.

6. Combined approach (3c, 4) Tom

Cervicobrachialgia or
shoulder pain during
neck movement

6. Combined approach (2, 3b) Tom

No detail reported

**1. No method of exclusion
undertaken or reported Tom**

History of ... Cervical
radiculitis or
radiculopathy..’ The
physical exam consisted
of active, passive, and
accessory motion testing
of the shoulder, shoulder
girdle, and cervical and
thoracic spine

6. Combined approach (2, 3b, 4) Greg

thoracic spine

No detail reported	1. No method of exclusion undertaken or reported	Greg
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Exclusion criteria ‘... disc pathologies...’. No further detail	2. Localized cervical spine symptoms and/or radiculopathy	Greg
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Patients with cervical pathology but no further detail reported	2. Localized cervical spine symptoms and/or radiculopathy	Chris
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Patients with cervical pathology but no further detail reported	2. Localized cervical spine symptoms and/or radiculopathy	Greg
---	--	-------------

No detail reported	1. No method of exclusion undertaken or reported	Greg
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'...shoulder pain referred from vertebral structures diagnosed by spinal clearing tests.'
Reference to Maitland, 2001

4. Manual testing

Greg

No detail reported

1. No method of exclusion undertaken or reported

Greg

History of cervical surgery but no further detail reported

5. History of cervical surgery

Chris

Patients with cervical radiculopathy but no further detail reported

2. Localized cervical spine symptoms and/or radiculopathy

Chris

Cervical compression test

4. Manual testing

Chris



No detail reported	1. No method of exclusion undertaken or reported	Emma
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No detail reported	1. No method of exclusion undertaken or reported	Emma
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No detail reported	1. No method of exclusion undertaken or reported	Chris
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Signs and symptoms suggestive of cervical radiculopathy but no further detail reported	2. Localized cervical spine symptoms and/or radiculopathy	Emma
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No detail reported	1. No method of exclusion undertaken or reported	Emma
'blatantly misdiagnosed cervical spine disorders'. No specific details given	2. Localized cervical spine symptoms and/or radiculopathy	Emma
Patients with evidence of referred pain from cervical spine but no further detail reported	2. Localized cervical spine symptoms and/or radiculopathy	Chris
Patients with numbness or tingling in the upper extremity or previous cervical spine surgery	6. Combined approach (2, 6)	Chris

cervical spine surgery but no further detail reported		
Signs and symptoms suggestive of referred pain but no further detail reported	2. Localized cervical spine symptoms and/or radiculopathy	Chris
Evidence of cervical radiculopathy (not specified)	2. Localized cervical spine symptoms and/or radiculopathy	Emma
No detail reported	1. No method of exclusion undertaken or reported	Chris
Patients with evidence of referred pain from cervical spine but no further detail reported	2. Localized cervical spine symptoms and/or radiculopathy	Chris
Muscle strength and muscle stretch reflexes	3c. Cervical examination; neurological testing	Chris

of the neck were assessed but no further detail reported

Patients with evidence of referred pain from cervical spine but no further detail reported	2. Localized cervical spine symptoms and/or radiculopathy	Chris
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Signs and symptoms suggestive of cervical disorders but no further detail reported	2. Localized cervical spine symptoms and/or radiculopathy	Emma
--	--	-------------

Patients with clinical signs of cervical syndrome but no further detail reported	2. Localized cervical spine symptoms and/or radiculopathy	Chris
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Patients with shoulder pain associated with cervical radiculopathy but no further detail reported	2. Localized cervical spine symptoms and/or radiculopathy	Chris
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Patients with referred pain in the shoulder but no further detail reported	2. Localized cervical spine symptoms and/or radiculopathy	Chris
Patients with an injury to the cervical region but no further detail reported	2. Localized cervical spine symptoms and/or radiculopathy	Chris
No detail reported	1. No method of exclusion undertaken or reported	Chris
Patients with radicular signs but no further detail reported	2. Localized cervical spine symptoms and/or radiculopathy	Chris
No detail reported	1. No method of exclusion undertaken or reported	Greg
Patients with severe neck pain were excluded but no further detail	2. Localized cervical spine symptoms and/or radiculopathy	Chris

but no further detail reported	radiculopathy	
Patients with cervical spine problems detailed as reporting more neck pain than shoulder pain	2. Localized cervical spine symptoms and/or radiculopathy	Chris
Cervico-throacic related pain (positive cervical compression test; excessive kyphosis, scoliosis)	6. Combined approach (2, 4)	Emma
Signs and symptoms suggestive of cervical disorders but no further detail reported	2. Localized cervical spine symptoms and/or radiculopathy	Emma

No detail reported

**1. No method of exclusion
undertaken or reported**

Chris

Shoulder symptoms
reproduced with neck
movements or a positive
test for the foramina
intervertebralia (pain or
neurological symptoms
during manual extension
combined with manual
lateral flexion and
rotation toward the
tested side)

6. Combined approach (3b, 4)

Emma

Shoulder symptoms
reproduced with neck
movements and/ or
positive Spurling's test

6. Combined approach (3b, 4)

Chris

Exclusion included '...
cervical radiculopathy...'.
No further detail given

**2. Localized cervical spine
symptoms and/or
radiculopathy**

Greg

No further detail given **radiculopathy**

Primary complaint of neck pain and/ or reproduction of shoulder pain with cervical rotation, axial compression or Spurling's test **6. Combined approach (3b, 4)** **Chris**

Signs and symptoms suggestive of cervical disorders but no further detail reported **2. Localized cervical spine symptoms and/or radiculopathy** **Tom**

No detail reported **1. No method of exclusion undertaken or reported** **Greg**

No detail reported	1. No method of exclusion undertaken or reported	Greg
Reproduction of shoulder pain on active or passive cervical spine movements.	3b. Cervical examination; movement, AROM and/or PROM	Emma
Exclusion criteria '... reproduction of symptoms with active or passive cervical movements...'. Assessment process included '...physical examination of the cervical spine.'	6. Combined approach (3a, 3b)	Greg
Exclusion criteria included '...ruled out	2. Localized cervical spine symptoms and/or	Greg

cervical radiculopathy or **radiculopathy**
radiculitis...' No further
detail given.

Exclusion criteria '... cervical spondylosis with referring pain to the shoulder...'. No further detail given	2. Localized cervical spine symptoms and/or radiculopathy	Greg
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Cervical pain at rest, or cervical pain during active movements, or reproduction of shoulder pain during active cervical movements or with overpressure to the cervical spine	6. Combined approach (2, 3b, 4)	Chris
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Cervical repeated movement testing affects shoulder pain	3b. Cervical examination; movement, AROM and/or BBOM	Greg
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affects shoulder pain and / or range of movement. No further detail provided	PROM	
Cervical repeated movement testing affects shoulder pain and / or range of movement. No further detail provided	3b. Cervical examination; movement, AROM and/or PROM	Greg
Exclusion criteria '... cervical radiculopathy...' No further detail given	2. Localized cervical spine symptoms and/or radiculopathy	Greg
Shoulder pain produced by cervical assessment but no further detail reported	3a. Cervical examination; unspecified	Chris
Signs and symptoms suggestive of cervical disorders but no further	2. Localized cervical spine symptoms and/or radiculopathy	Tom

disorders but no further detail reported

radiculopathy

No detail reported

1. No method of exclusion undertaken or reported

Chris

No detail reported

1. No method of exclusion undertaken or reported

Chris

No current or previous complaints of neck pain within the past year.

Patients with shoulder pain were excluded if they had symptoms of paresthesia or neurological deficits,

had a primary complaint of neck or thoracic pain;

2. Localized cervical spine symptoms and/or radiculopathy

Tom

6. Combined approach (2, 3b, 4)

Greg

signs of cervical nerve root involvement; reproduction of shoulder or arm pain with cervical rotation to the ipsilateral side, axial compression, or Spurling's Test;

Excluded if cervical spine involvement in the disorder could be demonstrated. This was defined by active neck movement reproducing pain in the shoulder region.

- cervical or shoulder symptoms reproduced by a cervical - screening exam; symptoms of numbness or tingling in the upper extremity

3b. Cervical examination; movement, AROM and/or PROM

Greg

6. Combined approach (2, 3a)

Greg

Shoulder pain associated with radicular pain of cervical origin but no further detail reported

2. Localized cervical spine symptoms and/or radiculopathy

Chris

Nil mention of method for excluding Cervical spine involvement however in the analysis the authors do mention that 47 people were excluded due to cervicothoracic involvement

1. No method of exclusion undertaken or reported

Cervical spine was examined but no further detail reported

3a. Cervical examination; unspecified

Chris

Normal neck with no neurological signs but no further detail reported

2. Localized cervical spine symptoms and/or radiculopathy

Chris

Nil mention of method for excluding Cervical spine involvement however in the analysis the authors do mention that 5 people were excluded due to cervical involvement

2. Localized cervical spine symptoms and/or radiculopathy

Greg

No detail reported
however 2 people were
excluded due to
'Cervical pathology'.

**2. Localized cervical spine
symptoms and/or
radiculopathy**

Greg

No detail reported

**1. No method of exclusion
undertaken or reported**

Greg

No detail reported

**1. No method of exclusion
undertaken or reported**

Chris

No detail reported

**1. No method of exclusion
undertaken or reported**

Greg

Exclusion criteria

2. Localized cervical spine

Greg

included '... cervical rhizopathy..'. No further detail given.

symptoms and/or radiculopathy

Reproduction of shoulder symptoms with cervical spine examinationReproduction of shoulder symptoms with cervical spine	3a. Cervical examination; unspecified	Tom
...cervical myofascial pain syndrome, radicular pain...'. No further detail given	2. Localized cervical spine symptoms and/or radiculopathy	Greg
Exclusion criteria included '...cervical myofascial pain syndrome, radicular	2. Localized cervical spine symptoms and/or radiculopathy	Greg

syndrome, radicular
pain...'. No further detail
given

No detail reported

**1. No method of exclusion
undertaken or reported**

Tom

No detail reported

**1. No method of exclusion
undertaken or reported**

Greg

Signs and symptoms
suggestive of cervical
disorders but no further
detail reported

**2. Localized cervical spine
symptoms and/or
radiculopathy**

Chris

Exclusion criteria
included'... history of
disease in ... cervical
region...' No further
detail given

**2. Localized cervical spine
symptoms and/or
radiculopathy**

Greg

Exclusion criteria included 'cervical radiculopathy and reproduction of symptoms during the cervical screening examination. No further detail of what the 'screening' test consisted of	6. Combined approach (2, 3a)	Greg
... cervical problems accompanied by radicular symptoms...'. No further detail given	2. Localized cervical spine symptoms and/or radiculopathy	Greg
Presence of neck pain but no further detail reported	2. Localized cervical spine symptoms and/or radiculopathy	Chris
Exclusion criteria '... cervical radiculopathy...'. No further detail given	2. Localized cervical spine symptoms and/or radiculopathy	Greg

further detail given

Exclusion criteria included '...History of Cervical pain and Cervical radiculopathy...'. No further detail given

2. Localized cervical spine symptoms and/or radiculopathy

Greg

No detail reported

1. No method of exclusion undertaken or reported

Greg

Cervical spine symptoms

2. Localized cervical spine symptoms and/or radiculopathy

Tom

No detail reported

1. No method of exclusion undertaken or reported

Tom

Patients with cervical radiculopathy but no further detail reported

2. Localized cervical spine symptoms and/or radiculopathy

Chris

Signs and symptoms suggestive of referred pain but no further detail reported

2. Localized cervical spine symptoms and/or radiculopathy

Tom

... extrinsic diseases such as cervical spondylosis with referring pain to the shoulder.' No further detail given

2. Localized cervical spine symptoms and/or radiculopathy

Greg

Shoulder symptoms reproduced during active cervical spine movements or during palpation of cervical joints; paresthesia in the affected upper limb

6. Combined approach (2, 3b, 4)

Tom

Only exclusion related to **5. History of cervical surgery** Greg
previous 'neck' surgery.
No further details given