Supplemental Table S1

RESEARCH QUESTION 1: WHAT SHOULD NON-PHARMACOLOGICAL MANAGEMENT AIM FOR?

Intervention/management strategy	Comparator	N	Aim of management	SD&OA*	Reference
SLE					
Physical exercise and physical activity					
P: Phase I: supervised aerobic exercise at 70-80% of maximum heart rate. Phase II: continue exercise in the supervised setting for 1 month/ unsupervised home exercise programme for 6 months. C: Range of montion/muscle strengthening	Other SLE patients	Intervention: 5 Control: 5	1ry: improvement of fatigue and functional status.; 2ry: bone mineral density and biomechanical markers.	11; W	Ramsey-Goldman, 2000 [1]
P: Exercise group= exercise (walking, cycling, and swimming) Relaxation group= listen to a relaxation audiotape in a darkened, warm, and quiet room C: Relaxation group: listen to relaxation audiotape	Other SLE patients	Intervention: 62 Control: 32	1ry: improvement of fatigue.; 2ry: quality of sleep, functional status, disease activity, anxiety and depression, aerobic capacity.	11; I	Tench, 2003 [2]
P: Supervised aerobic exercise: incremental load on a treadmill C: Usual care	Other SLE patients	Intervention: 41 Control: 19	1ry: improvement in functional ability, fatigue, depression, HRQoL, pain.; 2ry: aerobic capacity	10; I	Carvalho, 2005 [3]
P: Supervised aerobic exercise: walking on a treadmill for a 3-month programme C: N/A: intraindividual assessment	N/A; intraindividual assessment	Intervention: 6 Control: -	1ry: changes in disease activity, fatigue, and pain.; 2ry: erythrocyte sedimentation rate (ESR), C-reactive protein (CRP), aerobic capacity.	10; R	Clarke-Jenssen, 2005 [4]
P: Cardiorespiratory exercise test carried out on a treadmill C: No	Healthy controls	Intervention: 20 Control: 20	1ry: evaluation of aerobic capacity.	1; R	do Prado, 2011 [5]
P: Program of increasing exercise from 100 to 300 min/week (combined with reduced-calorie diet) C: N/A: intraindividual assessment	N/A; intraindividual assessment	Intervention: 15 Control: -	1ry: change in weight /BMI, waist circumference, self-reported physical activity	10; W	Otto, 2011 [6]
P: Home exercise program using WII Fit interactive video game for 10 weeks C: N/A: intraindividual assessment	N/A; intraindividual assessment	Intervention: 15 Control: -	1ry: improvement in fatigue.; 2ry: body weight, waist circumference, physical activity level, anxiety and depression, sleep quality, pain.	10; R	Yuen, 2011 [7]
P: Supervised training sessions: 35–40 minutes of resistance, 30 minutes of treadmill aerobic training, and 5 minutes of stretching exercises. C: Usual care	Other SLE patients	Intervention: 14 Control: 10	1ry: chronotropic reserve (CR); Heart rate recovery (absolute change)	11; W	Miossi, 2012 [8]
P: Ergospirometric test C: No	Healthy controls	Intervention: 27 Control: 30	1ry: changes in levels of IL-6, IL-10 and TNF-a.	10; I	da Silva, 2013 [9]
P: Supervised walking at a heart rate corresponding to the VT1 threshold. C: Usual care	Other SLE patients	Intervention: 18 Control: 20	1ry: Effects on endothelial function, aerobic capacity, disease activity	10; R	dos Reis-Neto, 2013 [10]

Intervention/management strategy	Comparator	N	Aim of management	SD&OA*	Reference
P: Walking, running, cycling, or use of an elliptical machine. C: No	Other SLE patients, healthy controls	Intervention: 14 Control: 12	1ry: improvements in vascular function; 2ry: inflammatory markers, disease activity	1; I	Barnes, 2014 [11]
P: Treadmill walking C: No	Healthy controls	Intervention: 8 Control: 10	1ry: effects on levels of cytokines (IFN-gamma, IL-6, IL-10, TNF-alfa) and sTNFR	10; I	Perandini, 2014 [12]
P: Seven strength exercises for the major muscle groups followed by aerobic exercise on a treadmill. C: Usual care	Other SLE patients, healthy controls	Intervention: 17 Control: 16	1ry: effects on lipid profile.;	11; W	Benatti, 2015 [13]
P: Aerobic training on a bicycle ergometer, for 6 weeks. C: N/A: intraindividual assessment	N/A; intraindividual assessment	Intervention: 30 Control: 30	1ry: changes in HRQoL.; 2ry: depression, fatigue	11; W	Bogdanovic, 2015 [14]
P: Two single bouts of acute aerobic exercise (moderate and intense) performed in a treadmill C: No	Other SLE patients, healthy controls	Intervention: 23 Control: 10	1ry: effects on levels of INF-γ, IL-10, IL-6, TNF-α and soluble TNF receptors (sTNFR1 and sTNFR2)	10; I	Perandini, 2015 [15]
P: Walking and bicycle vs free weight and elastic bands exercises 3 times/week for 12 weeks C: Usual care	Other SLE patients	Intervention: 21 Control: 21	1ry: improvement in HRQoL.; 2ry: depression, disease activity, aerobic capacity.	11; I	Abrahao, 2016 [16]
P: Endurance exercises (walking or bicycle) + strengthening exercises (with elastoband or weights for both upper and lower limbs) C: Usual care	Other SLE patients	Intervention: 15 Control: 18	1ry: changes in fatigue; 2ry: physical working capacity, perception of exertion.	11; W	Avaux, 2016 [17]
P: 0 to 3 months: high + low-moderate intensity aerobic exercise + education+ individual coaching. 4 to 12 months: high + low-moderate intensity aerobic exercise + individual coaching C: Usual care	Other SLE patients	Intervention: 18 Control: 17	1ry: aerobic capacity; 2ry: physical activity, HRQoL, disease activity, organ damage	11; I	Bostrom, 2016 [18]
P: Single bout of acute aerobic exercise performed 72 hours after a cardiopulmonary exercise test to determine VAT and RCP C: No	Other SLE patients, healthy controls	Intervention: 8 Control: 4	1ry: modulation of immune-related gene expression;	10; I	Perandini, 2016 [19]
P: Various modalities: aerobic exercise programme, resistance training, multi-component interventions. C: N/A	N/A	6 RCTs and 5 quasi-RCTs	1ry: changes in disease activity, fatigue, aerobic capacity, and depression.	12; R	O'Dwyer, 2017 [20]
P: Aerobic exercise (treadmill, walking/cycling/swimming) C: N/A	N/A	3 studies: 2 RCT, 1 quasi-experimental	1ry: improvement of fatigue	12; R	Wu, 2017 [21]
P: Supervised treadmill aerobic training C: No	Other SLE patients	Intervention: 9 Control: 10	1ry: changes in insulin sensitivity; 2ry: body weight, aerobic capacity	11; W	Benatti, 2018 [22]
P: Hatha yoga classes (deep breathing, relaxation, meditation, poses for strength, flexibility, and balance) + encouragement to home practice for 8 weeks C: N/A: intraindividual assessment	N/A; intraindividual assessment	Intervention: 7 Control: -	1ry: increasing of body awareness, benefits (flexibility, less fatigue, relaxation, enjoyment)	9; W	Middleton, 2018 [23]

Intervention/management strategy	Comparator	N	Aim of management	SD&OA*	Reference
P: Aerobic exercise on a treadmill C: Guidelines about healthy lifestyle	Other SLE patients	Intervention: 26 Control: 32	1ry: cardiovascular risk (arterial stiffness); 2ry: inflammation, oxidative stress (cardiovascular risk), cardiorespiratory fitness;	10; I	Soriano-Maldonado, 2018 [24]
P: Kinesiotherapy protocol for 4 months C: Usual care	Other SLE patients	Intervention: 5 Control: 9	1ry: differences in the serum levels of cytokines (IL-2, IL-5, IL-6, IL-8, IL-10 and TNF-a) and the numbers of CD11b+ and CXCR2+ neutrophils and lymphocytes; 2ry: disease activity, HRQoL, body 2circumferences, percentage of body fat, fl5exibility tests, muscular strength.	10; R	Timoteo, 2018 [25]
P: Aerobic exercise C: N/A	N/A	2 RCTs	1ry: changes in SF-36 subscale scores	12; R	da Hora, 2019 [26]
P: Walk With Ease (WWE) programme C: Did not complete intervention	Other SLE patients	Intervention: 48 Control: 27	1ry: changes in pain, stiffness, fatigue;	10; I	Sheikh, 2019 [27]
P: Wearing of pedometer + face-to-face physical activity counselling + follow up phone calls C: Usual care	Other SLE patients	Intervention: 38 Control: 38	1ry: changes in fatigue, quality of sleep, HR2QoL	11; I	Wu, 2019 [28]
P: Moderate to vigorous intensity aerobic exercise C: Physical activity guidelines and basic nutritional information	Other SLE patients	Intervention: 26 Control: 32	1ry: stress, quality of sleep, fatigue, depression, HRQoL; ;	10; I	Gavilan-Carrera, 2020 [29]
P: Strengthening and stretching upper limb exercises C: Four sessions of training in alternative methods of performing daily activities, use of aids, joint protection and energy conservation	Other SLE patients	Intervention: 31 Control: 27	1ry: changes in DASH (Disabilities of the Arm, Shoulder and Hand) score.; 2ry: changes in pain, grip and pinch strength, Purdue test and HRQoL, functional ability	11; W	Keramiotou, 2020 [30]
P: Whole body vibration exercises (WBVE) C: Whole body vibration exercise	Healthy controls	Intervention: 18 Control: 9	1ry: increase in muscle activation	11; I	Dionello, 2021 [31]
P: Home-based moderate-intensity aerobic exercise and resistance training. C: Usual care	Other SLE patients	Intervention: 12 Control: 11	1ry: changes in physical fitness, executive functions; 2ry: disease activity, body composition	10; I	Kao, 2021 [32]
P: Whole body vibration exercises (WBVE) C: Isometry training programme	Other SLE patients	Intervention: 11 Control: 10	1ry: fatigue, functional ability, HRQoL;	11; W	Lopes-Souza, 2021 [33]
P: No intervention. Exposure: sedentary behaviour, as per one item from the Rapid Assessment of Physical Activity (RAPA). C: Self-reported physical activity	Other SLE patients	Intervention: 41 Control: 184	1ry: improvement of depression.; 2ry: disease activity, organ damage.	5; R	Patterson, 2021 [34]
Patient education and self-management					
P: Attend a self-management course C: Usual care	Other SLE patients	Intervention: 21 Control: 20	1ry: changes in fatigue, coping skills, self-efficacy, depression, pain, disease activity;	10; I	Sohng, 2003 [35]
P: Educational programme C: Educational programme	SSc patients	Intervention: 5 with SSc, 5 with SLE Control: N/A	Improvement of patient education	9; R	Brown, 2004 [36]
P: Attend a psychoeducational group combining functional strategy training and psychosocial support (MINDFULL program) C: N/A: intraindividual assessment	N/A; intraindividual assessment	Intervention: 17 Control: -	1ry: improvement in metamemory; 2ry: organ damage, depression	10; I	Harrison, 2005 [37]

Intervention/management strategy	Comparator	N	Aim of management	SD&OA*	Reference
P: Take part in a patient education program C: N/A: intraindividual assessment	N/A; intraindividual assessment	Intervention: 13 Control: -	1ry: improvement in patient satisfaction and awareness; 2ry: pain, HRQoL, fatigue, physical well-being	9; R	Miljeteig, 2009 [38]
P: Attend the Chronic Disease Self-Management Program (CDSMP) C: N/A: intraindividual assessment	N/A; intraindividual assessment	Intervention: 45 Control: -	1ry: changes in health status, self-efficacy, self-management behaviours, health services utilization.;	10; I	Drenkard, 2012 [39]
P: Education regarding SLE and its management including lifestyle modifications C: Usual care	Other SLE patients	Intervention: 21 Control: 20	1ry: medication knowledge and adherence	11; W	Ganachari, 2012 [40]
P: Standardised daily cellular text message reminders (CTMR) for HCQ intake as prescribed + printed information sheet C: Usual care	Other SLE patients	Intervention: 19 Control: 22	1ry: improvement in medication adherence to; HCQ, adherence to visits; 2ry: disease activity; ; ;	11; W	Ting, 2012 [41]
P: Take part in BLESS (Balancing Lupus Experience with Stress Strategies) study C: Usual care	Other SLE patients	Intervention: 15 Control: 15	1ry: changes in health distress, self-efficacy, depression, HRQoL, anxiety	11; W	Williams, 2014 [42]
P: 0 to 3 months: high + low-moderate intensity aerobic exercise + education+ individual coaching. 4 to 12 months: high + low-moderate intensity aerobic exercise + individual coaching C: Usual care	Other SLE patients	Intervention: 18 Control: 17	1ry: aerobic capacity; 2ry: physical activity, HRQoL, disease activity, organ damage	11; I	Bostrom, 2016 [18]
P: 3 phases targeted nursing C: Regular specific nursing	Other SLE patients	Intervention: 58 Control: 58	1ry: changes in medication adherence, disease activity, organ damage, quality of life	11; W	Zhang, 2016 [43]
P: Take part in FAME (Fatigue and Activity Management Education) = 1 h group education / 1 h individual goal C: N/A: intraindividual assessment	N/A; intraindividual assessment	Intervention: 21 Control: -	1ry: changes in fatigue, occupational participation, mood, self-efficacy, HRQoL;	10; I	O'Riordan, 2017 [44]
P: 3-year CVD prevention counselling program C: N/A: intraindividual assessment	N/A; intraindividual assessment	Intervention: 121 Control: -	1ry: changes in CV risk	10; I	Yelnik, 2017 [45]
P: Session of mentoring C: N/A: intraindividual assessment	N/A; intraindividual assessment	Intervention: 36 Control: -	1ry: changes in self-care agency, self-care activity, HRQoL	10; I	Kusnanto, 2018 [46]
P: Follow a web-based educational program + answer module questions on an online social media forum with other participants C: Usual care	Other SLE patients	Intervention:13 Control: 14	1ry: changes in medication adherence, stress, self-efficacy, quality of life, SOA, SOC, empowerment	11; W	Scalzi, 2018 [47]
P: Receive education and support by a peer-to-peer mentoring C: N/A: intraindividual assessment	N/A; intraindividual assessment	Intervention: 23 Control: -	1ry: HRQoL, self-management, and disease activity; 2ry: treatment credibility, satisfaction with care or service delivery;	10; I	Williams, 2018 [48]
P: To be enrolled in the Peer Approaches to Lupus Self-management (PALS) program C: N/A: intraindividual assessment	N/A; intraindividual assessment	Intervention: 20 Control: -	1ry: HRQoL, self-management, disease activity, depression, anxiety	10; I	Williams, 2019 [49]
P: Use of SimpleMed+ pillbox to organise and administer medication + receiving digital reminders during 2° month C: Usual care	Other SLE patients	Intervention: 8 Control: 11	1ry: improvement of medication adherence	11; W	Harry, 2020 [50]

Intervention/management strategy	Comparator	N	Aim of management	SD&OA*	Reference
P: Web-based education programme (3 months) followed by telephone counselling by physicians (3 months) C: Usual care	Other SLE patients	Intervention: 40 Control: 40	1ry: changes in fatigue and self-efficacy.	11; W	Kankaya, 2020 [51]
P: App for self-tracking lifestyle activities and symptoms, and weekly telehealth coaching sessions C: Usual care	Other SLE patients	Intervention: 25 Control: 22	1ry: improvements in fatigue, HRQoL and pain; 2ry: adherence to app and coaching sessions.	11; W	Khan, 2020 [52]
P: PainTRAINER: 8 weeks, automated, internet-based version of pain coping skills training programme C: Usual care	Other SLE patients	Intervention: 30 Control: 30	1ry: HRQoL, pain; 2ry: coping skills	11; W	Allen, 2021 [53]
P: Follow the Chronic Disease Self-Management Program (CDSMP) C: Usual care	Other SLE patients	Intervention: 24 Control: -	1ry. Changes in self-efficacy, patient activation, disease activity	11; W	White, 2021 [54]
Psychological interventions					
P: Enrolled in a Brief Supportive–Expressive Group Psychotherapy + "booster sessions" for 3 months C: Usual care	Other SLE patients	Intervention: 64 Control: 64	1ry: reduction of psychological distress, improvement of HRQoL, disease activity, health service utilization;	11; I	Dobkin, 2002 [55]
P: Enrolled in a Brief Supportive–Expressive Group Psychotherapy + "booster sessions" for 3 months C: Usual care	Other SLE patients	Intervention: 58 Control: 66	1ry: changes in disease activity, organ damage, illness intrusiveness, psychological distress;	11; W	Edworthy, 2003 [56]
P: Receive biofeedback-assisted cognitive behavioural treatment (BF/CBT) C: Usual care	Other SLE patients	Intervention: 32 Control: 27+33	1ry: changes in physical functioning, pain,; psychological adaptation; 2ry: disease status	11; I	Greco, 2004 [57]
P: Discussion between educator, patient, and partner, after a regular visit for medical care + telephone follow up C: 45-minute video presentation about lupus, and monthly telephone calls	Other SLE patients	Intervention: 64 Control: 58	1ry: improvement of self-efficacy, partner support, problem-solving skills; 2ry: health status disease activity	11; W	Karlson, 2004 [58]
P: Application of the Cognitive-Behaviour Therapy based on the Chronic Illness Self-Management Course C: Usual care	Other SLE patients	Intervention: 11 Control: 22	1ry: changes illness representations.; 2ry: changes in anxiety/depression, dysfunctional cognition, physical health.	10; I	Goodman, 2005 [59]
P: Group session focused on psychoeducative and psychotherapeutic elements C: Same intervention 6 months later (waiting group)	Other SLE patients	Intervention: 26 Control: 8	1ry: improvement of coping ability; 2ry: changes in disease activity, HRQoL	10; I	Haupt, 2005 [60]
P: Enrolled in a psychosocial group program organized by Community Rehabilitation Network C: Usual care	Other SLE patients	Intervention: 56 Control: 20	1ry: improvement in psychological distress, HRQoL and self-esteem.	10; R	Ng, 2007 [61]
P: Attend 10 Cognitive-Behaviour Therapy sessions C: General recommendations about health lifestyle	Other SLE patients	Intervention: 21 Control: 24	1ry: changes in disease activity, psychological variables (stress, depression and anxiety), HRQoL	11; W	Navarrete-Navarrete, 2010 [62]
P: Attend 10 Cognitive-Behaviour Therapy sessions C: General recommendations about health lifestyle	Other SLE patients	Intervention: 18 Control: 16	1ry: changes in HRQoL domains	11; W	Navarrete-Navarrete, 2010 [63]

Intervention/management strategy	Comparator	N	Aim of management	SD&OA*	Reference
P: Follow three separate CBT modules preinstalled on a CD ROM C: Educational sessions usual care	Other SLE patients	Intervention: 27 Control: 10 +16	1ry: changes in pain, behaviour, self-perception, self-efficacy, HRQoL	11; W	Brown, 2012 [64]
P: Cognitive-Behaviour Therapy sessions, supportive therapy, multiple psychological interventions, psychoeducational intervention. C: N/A	N/A	6 RCTs	1ry: HRQoL, disease activity	12; R	Zhang, 2012 [65]
P: Follow a modified BI-CBT 8 step program + Skin care education + appearance enhancement workshop C: Usual care	Other SLE patients	Intervention: 10 Control: 5	1ry: improvement in HRQoL	10; I	Jolly, 2014 [66]
P: Cognitive-Behaviour Therapy sessions, psychoeducational intervention, expressive group psychotherapy. C: N/A	N/A	6 RCTs	1ry: improvement in depression, disease activity, fatigue, HRQoL and pain.	12; R	Liang, 2014 [67]
P: Follow the "Better Choice, Better Health" Chronic Disease Self-Management Program (CDSMP) C: Usual care	Other SLE patients	Intervention: 15 Control: 15	1ry: psychological distress; 2ry: HRQoL, depression	11; W	Williams, 2014 [68]
P: Participate in a mindfulness group protocol C: N/A: intraindividual assessment	N/A; intraindividual assessment	Intervention: 6 Control: -	Coping abilities	4; W	Horesh, 2017 [69]
P: Attend a mindfulness-based cognitive therapy C: General recommendations about health lifestyle	Other SLE patients	Intervention: 23 Control: 23	1ry: changes in psychological symptoms and HRQoL	11; I	Solati, 2017 [70]
P: Brief group psychoanalytic psychotherapy: 90 min session once a week for 20 weeks. C: Usual care	Other SLE patients	Intervention: 43 Control: 37	1ry: improvement in disease activity, HRQoL, coping skills, anxiety, and depression.	11; I	Conceição, 2019 [71]
P: Attend 10 Cognitive-Behaviour Therapy sessions C: N/A	N/A	2 studies: 2 RCTs	1ry: changes in HRQoL domains, anxiety, and depression	12; R	da Hora, 2019 [26]
P: Attend a mindfulness-based cognitive therapy + homework C: N/A: intraindividual assessment	N/A; intraindividual assessment	Intervention: 25 Control: -	1ry: changes in depression, anxiety, stress, and satisfaction with life	10; I	Kim, 2019 [72]
P: Eight Sessions of Acceptance and Commitment Therapy (ACT) C: Usual care	Other SLE patients	Intervention: 12 Control: 12	1ry: changes in disappointment, psychological distress, and psychasthenia;	10; I	Sahebari, 2019 [73]
P: Receive psychoeducational interventions C: Health education, and nontargeted psychological comfort	Other SLE patients	Intervention: 42 Control: 43	1ry: changes in HRQoL, anxiety and depression	11; W	Xu, 2021 [74]
Dietary therapy and nutrition					
P: NCEP Step 2 diet: 30% or less calories from fat (7% from saturated fat, 13% from monounsaturated fat, and 10% from polyunsaturated fat), and < 200 mg of cholesterol per day + maintain their usual level of physical activity. C: Usual care	Other SLE patients	Intervention: 8 Control: 8	1ry: changes in dietary intake, HRQoL, lipid profile.; 2ry: disease activity	11; W	Shah, 2002 [75]

Intervention/management strategy	Comparator	N	Aim of management	SD&OA*	Reference
P: No intervention. Dietary nutrients estimated by a semiquantitative food frequency questionnaire C: No	Other SLE patients	Intervention: 7 Control: 189	1ry: changes in dietary intake, disease activity, organ damage.	5; R	Minami, 2003 [76]
P: 1° group: 3g MaxEPA+ 3mg copper 2° group: 3g MaxEPA + placebo copper 3° group: 3 mg copper+ placebo oil fish C: Placebo	Other SLE patients	Intervention: 40 Control: 12	1ry: changes in disease activity 2ry: haematological, biochemical, and immunological indices.	11; W	Duffy, 2004 [77]
P: Counselled to follow the NCEP Step II diet: < 30% of energy as fat and < 7% as saturated fat, and < 200 mg of cholesterol per day 21. Counselled to limit their intake of sodium (< 2400 mg/day) and refined and added sugars and consume 2–3 servings of skim/low fat dairy foods and ≥ 5 servings of fruits and vegetables per day. C: Usual care	Other SLE patients	Intervention: 8 Control: 7	1ry: changes in dietary intake, HRQoL, lipid profile.; 2ry: disease activity	11; W	Shah, 2004 [78]
P: Assessing daily use of micronutrient supplements (MS) in SLE patients: Calcium, Vitamin D, Multivitamins (vitamin B6, folic acid, minerals iron, B12, C, E, magnesium, potassium). C: No	Other SLE patients	Intervention: 137 Control: 122	1ry: changes in disease activity, disease damage, HRQoL, healthcare resource utilization.	1; I	Aghdassi, 2010 [79]
P: No intervention. Dietary nutrients estimated by a semiquantitative food frequency questionnaire (Vitamin B6, Vitamin B12, folate, total dietary fibre, soluble dietary fibre, insoluble dietary fibre). C: No	Other SLE patients	Intervention: 216 Control: -	1ry: changes in disease activity.	5; R	Minami, 2011 [80]
P: Reduced calorie diet (1200/1500 kcal/d) [combined with increasing exercise from 100 to 300 min/w] C: N/A: intraindividual assessment	N/A; intraindividual assessment	Intervention: 15 Control: -	1ry: changes in BMI, waist circumference, physical activity	10; W	Otto, 2011 [6]
P: Low GI diet whereby carbohydrate intake was limited to 45 g per day of low GI food, without restricting the consumption of fat and protein C: Low calorie diet	Other SLE patients	Intervention: 11 Control: 12	1ry: differences in weight loss.; 2ry: tolerability of diet, biomarkers of cardiovascular risk, disease activity, fatigue, and sleep quality.	11; W	Davies, 2012 [81]
P: No intervention. Administration of food frequency questionnaire (FFQ) + study of fatty acid content and plaque occurrence C: No	Other SLE patients	Intervention: 114 Control: 122	1ry: changes in dietary intake, disease activity, CV risk.	1; I	Elkan, 2012 [82]
P: With each meal, each patient received 1 capsule for 3 months, containing 500 mg turmeric (22.1 mg was the active ingredient curcumin) C: Placebo	Other SLE patients	Intervention: 12 Control:12	1ry: effect on proteinuria.; 2ry: blood pressure, haematuria.	11; I	Khajehdehi, 2012 [83]

Intervention/management strategy	Comparator	N	Aim of management	SD&OA*	Reference
P: CVD-PCP counselling program= Phase 1: assessment of CVD risk factor on patients Phase 2: education on cardiovascular diseases and discussion on prevention strategies. Followed by a patient-centred nutrition counselling to attend at least once a month C: Usual care	Other SLE patients	Intervention: 41 Control: 30	1ry: changes in dietary intake, weight/ BMI, waist circumference, lipid profile.;	10; I	Everett, 2015 [84]
P: 1000 mg of green tea extract C: Placebo	Other SLE patients	Intervention: 32 Control: 36	1ry: changes in disease activity.; 2ry: HRQoL	11; I	Shamekhi, 2017 [85]
P: Health coaching (weekly calls to educate and implement changes based on data analysis) C: Usual care	Other SLE patients	Intervention: 20 Control: 20	1ry: improvement in fatigue, pain and HRQoL;	11; W	Rothman, 2018 [86]
P: No intervention. Good adherence (>10 points) to Med Diet (14-item questionnaire on food consumption frequency and habits) C: No	Other SLE patients	Intervention: 143 Control: 16	1ry: improvement in disease activity, organ damage, CV risk, anthropometric data.	1; R	Pocovi-Gerardino, 2021 [87]
Complementary and alternative medicine					
P: Administration of Traditional Chinese Medicine (cicimifuga rhizome 9g + oldenlandia herb 18 h, southernwood 15 g, red peony root 12 g + moutan bark 12 g+ rehmannia root 15 g+ turtle shell 12g etc) C: Usual care (Western medicine)	Other SLE patients	Intervention: 85 Control: 85	1ry: changes in lipid levels	11; W	Wen, 2007 [88]
P: Acupuncture (modified Feng 1985 protocol) C: Minimal needling, usual care	Other SLE patients	Intervention: 103 Control: 89	1ry: changes in pain, fatigue, disease activity; 2ry: feasibility, adherence to protocol	11; I	Greco, 2008 [89]
P: Being CAT (complementary and alternative therapies) users C: No	Other SLE patients	Intervention: Control:	1ry: changes in HRQoL, organ damage	1; R	Alvarez-Nemegyei, 2009 [90]
P: Traditional Chinese Medicine: Dan-Chi-Liu-Wei combination (granules) C: Usual care + 10% Traditional Chinese medicine	Other SLE patients	Intervention: Control:	1ry: change of steroid dosage; 2ry: frequency of disease flare-up, change in the immunologic index (C3, C4, anti-dsDNA); ;	11; I	Liao, 2011 [91]
P: Zi Shen Qing (combination of 6 herbs) C: Hydroxychloroquine 100 mg/12h PO	Other SLE patients	Intervention: 42 Control: 42	1ry: change in SLEDAI-2K; 2ry: change in Chinese medicine syndromes (CMS), change in prednisone dose, frequency of flares	11; I	Linda, 2013 [92]
Photoprotection					
P: 3 different sunscreens: Sunscreen A: UVB: Octocrylene. UVA: Mexoryl SX, Mexoryl XL, Parsol 1789. TiO2), SPF >60 Sunscreen B: (UVB: Eusolex 6300, Parsol MCX, Uvinul T150, Neohelipan. UVA: Parsol 1789. TiO2), SPF >75 Sunscreen C: (Eusolex 6300, Parsol MCX, Uvinul T150 UVA: Parsol 1789. TiO2) SPF= 35] C: N/A: intraindividual assessment	N/A; intraindividual assessment	Intervention: 11 Control: -	1ry: development of photoprovocation-induced skin lesions;	10; R	Stege, 2000 [93]

Intervention/management strategy	Comparator	N	Aim of management	SD&OA*	Reference
P: 2 mg/cm2 sunscreen Anthelios W30 La Roche- Posay (parsol 1789, uvinul N539, uvinul T150, mexoryl XL, titanium dioxide) C: N/A: intraindividual assessment	N/A; intraindividual assessment	Intervention: 66 Control: -	1ry: development of photoprovocation-induced skin lesions;	5; W	Herzinger, 2004 [94]
P: 9-week course of low-dose UVA1 phototherapy C: N/A: intraindividual assessment	N/A; intraindividual assessment	Intervention: 9 Control: -	1ry: changes in immunological parameters, disease activity	10; I	Szegedi, 2005 [95]
P: Broad-spectrum liposomal sunscreen 20 min prior to a combined standardized UVA/UVB irradiation C: Unprotected skin, sunscreen use	Healthy controls, intraindividual assessment	Intervention: 20 Control: 10	1ry: changes in IFN-driven inflammation;	10; I	Zahn, 2014 [96]
P: Photoprotection awareness C: No	Other SLE patients	Intervention: 205 Control: 17	1ry: changes in organ damage, disease activity (awareness, knowledge- related)	1; I	Abdul Kadir, 2018 [97]
Healthcare models					
P: Analysis (coding) of active patient-physician communication from audiotaped routine visits C: N/A: intraindividual assessment	N/A; intraindividual assessment	Intervention: 79 Control: -	1ry: changes in disease activity	10; I	Ward, 2003 [98]
P: Application of the continuous care model (CCM) [Orientation, sensitization, control] C: N/A: intraindividual assessment	N/A; intraindividual assessment	Intervention: 34 Control: -	1ry: changes in knowledge, HRQoL	10; I	Sahebalzamani, 2017 [99]
P: Transitional care plan (structural assessments and corresponding interventions based on the Omaha System) + telephone follow up 2, 3, 6, and 10 weeks after discharge C: Usual care	Other SLE patients	Intervention: 64 Control: 61	1ry: improvement of self-care, readmission rates, quality of life;	11; I	Xie, 2018 [100]
P: Multidisciplinary care (from a physician, pharmacist, and nurse) in addition to routine clinical follow up C: Usual care	Other SLE patients	Intervention: 42 Control: 40	1ry: changes in disease activity, satisfaction with information about medicines, HRQoL; 2ry: organ damage, self-reported adherence, beliefs about medicines	11; W	Zhang, 2019 [101]
Laser treatment					
P: Treatment with pulsed dye laser (PDL) on discoid lesions C: N/A: intraindividual assessment	N/A; intraindividual assessment	Intervention: 12 Control: -	1ry: improvement in Cutaneous Lupus Erythematosus Disease Area and Severity Index (CLASI);	10; R	Erceg, 2009 [102]
P: Treatment with pulsed dye laser (PDL) on discoid lesions C: N/A: intraindividual assessment	N/A; intraindividual assessment	Intervention: 9 Control: -	1ry: improvement in cutaneous disease activity and organ damage	10; I	Rerknimitr, 2019 [103]
Social support					
P: Attend support group C: No	Other SLE patients	Intervention: 34 Control: 71	1ry: improvement in HRQoL	1; R	Dorsey, 2004 [104]
P: No intervention (exposure to illness uncertainty, social support, coping modes through questionnaires)- being hospitalized for over a week C: N/A: intraindividual assessment	N/A; intraindividual assessment	Intervention: 200 Control: -	1ry: changes in illness uncertainty, social support, coping modes;	1; R	Li, 2019 [105]
Others					

Intervention/management strategy	Comparator	N	Aim of management	SD&OA*	Reference
P: Meditation instruction + meditation practice C: Usual care	Other SLE patients	Intervention: 15 Control: 15	1ry: changes in renal function, HRQoL	10; I	Bantornwan, 2014 [106]
P: Completing a Home Cleaning and Maintenance Product list (HCMPL) questionnaire C: No	Other SLE patients	Intervention: 80 Control: 41	1ry: changes in flares frequency	2; I	Squance, 2015 [107]
P: No intervention. Self-reported smoking status (smoker: one cigarette per day for three consecutive months) C: No	Other SLE patients	Intervention: 65 Control: 665	1ry: differences in disease activity, haematuria, nephropathy.	1; R	Xu, 2015 [108]
P: 1° group= warm shower / 2° group= warm footbath with adding of 2 cups of Epsom salt C: Warm shower	Other SLE patients	Intervention: 60 Control: 30	1ry: changes in fatigue	10; R	Abdelaziz, 2020 [109]
P: Training of the patient on how to use the cosmetic camouflage. Letting the patient use camouflage based on personal needs. C: Usual care	Other SLE patients	Intervention: 28 Control: 15	1ry: changes in HRQoL	11; W	Oliveira, 2020 [110]
P: Transcutaneous auricular vagus nerve stimulation (taVNS) C: Sham-stimulation	Other SLE patients	Intervention: 12 Control: 6	1ry: pain, tolerability; 2ry: fatigue, swollen joints count, disease activity	11; I	Aranow, 2021 [111]
SSc					
Physical exercise and physical activity					
P: Mouth stretching exercise and oral augmentation exercise C: N/A: intraindividual assessment	N/A; intraindividual assessment	Intervention: 10 selected among 35 patients with MMO≤30mm Control: N/A	Increase in mouth opening	10; R	Pizzo, 2003 [112]
P: Paraffin bath and hand exercises C: N/A: intraindividual assessment	N/A; intraindividual assessment	Intervention: 17 Control: N/A	Improvement of hand mobility	10; I	Sandqvist, 2004 [113]
P: Self-administrated stretching C: No intervention	Healthy controls	Intervention: 45 Control: 21 healthy controls	Improvement of hand mobility (fingers)	10; I	Mugii, 2006 [114]
P: Individualised rehabilitation program followed by at-home exercise C: Usual care	Other SSc patients	Intervention: 16 Control: 17	Improvement in quality of life and hand mobility	10; R	Antonioli, 2009 [115]
P: Connective tissue massage, Mc Mennell joint manipulation and home exercise C: Home exercise programme alone	Other SSc patients	Intervention: 20 Control: 20	Improvement of hand mobility	11; I	Bongi, 2009 [116]
P: Tailored rehabilitation program with manual therapy and exercise C: Educational advice and information about SSc	Other SSc patients	Intervention: 10 Control: 10	Improvement of global health, hand- and mouth mobility	11; W	Maddali Bongi, 2009 [117]
P: Aerobic exercise programme C: Aerobic exercise programme	Healthy controls	Intervention: 7 Control: 7	Improvement of aerobic capacity	10; I	Oliveira, 2009 [118]

Intervention/management strategy	Comparator	N	Aim of management	SD&OA*	Reference
P: Combined connective tissue massage, Kabat´s technique, kinesitherapy and home mimic exercise program C: Home exercise programme alone	Other SSc patients	Intervention: 20 Control: 20	Increase in mouth opening	11; I	Maddali Bongi, 2011 [119]
P: Supervised, treadmill, treadmill (aerobic), stretching exercise C: N/A: intraindividual assessment	N/A; intraindividual assessment	Intervention: 11 Control: N/A	Improvement of physical fitness	10; R	Pinto, 2011 [120]
P: Multi-faceted oral health intervention C: Usual care	Other SSc patients	Intervention: 26 Control: 22	Improvement of oral hygiene	11; W	Yuen, 2011 [121]
P: Orofacial exercise + multifaceted oral health intervention C: Usual care	Other SSc patients	Intervention: 26 Control: 22	Increase in mouth opening	11; I	Yuen, 2012 [122]
P: Stretching and mobility exercises at home using a newly developed telemedicine system C: Home kinesiotherapy protocol	SSc patients and RA-patients	Intervention: 20 (10 with RA) Control: 20 (10 with RA)	Improvement of hand mobility	11; W	Piga, 2014 [123]
P: Muscle strength C: No intervention	Healthy controls	Intervention: 20 Control: 20	Assessment of peripheral and respiratory muscle strength	1; R	Lima, 2015 [124]
P: Hand stretching exercise and weekly phone call with occupational therapist, with specific timetable for when to conduct exercise C: Hand stretching exercise and weekly phone call with occupational therapist	Other SSc patients	Intervention: 15 Control: 16	Improvement of hand mobility	11; I	Stefanantoni, 2016 [125]
P: Hand stretching & hip exercise, ergotherapy, thermal & mud bath, whirlpool therapy, soft tissue massage of the hands and joints C: Same as intervention, but excluding treatment of the hands.	Other SSc patients	Intervention: 31 Control: 22	Improvement of hand mobility	10; R	Horváth, 2017 [126]
P: Personalized physical therapy session with physiotherapist and occupational therapist C: Usual care	Other SSc patients	Intervention: 110 Control: 108	Reduction of functional impairment	11; R	Rannou, 2017 [127]
P: Exercise habits C: No intervention	Other SSc patients	Intervention: 389 Control: 363	Assessment of correlations between exercise and disease activity	5; I	Azar, 2018 [128]
P: Manual therapy and physiotherapy, three weeks every year for three years C: N/A: intraindividual assessment	N/A; intraindividual assessment	Intervention: 43 Control: N/A	Development of a personalised rehabilitation programme	10; R	Brignoli, 2018 [129]
P: Intervention 1: HIIT (cycling) twice a week for 12 weeks Intervention 2: HIIT (arm cranking) twice a week for 12 weeks C: No training protocol	Other SSc patients	Intervention 1: 11 Intervention 2: 11 Control: 12	Improvement of microcirculation in the digital area	11; W	Mitropoulos, 2018 [130]
P: Thermal modalities, tissue mobilisation, and upper extremity exercises with occupational therapist C: N/A: intraindividual assessment	N/A; intraindividual assessment	Intervention: 21 Control: N/A	Improvement of hand mobility	10; R	Murphy, 2018 [131]
P: Paraffin bath and hand exercises C: Hand exercises without wax bath	Other SSc patients	Intervention: 17 Control: 19	Improvement of hand mobility	11; I	Gregory, 2019 [132]
P: Paraffin bath and hand exercises C: Water bath, hand exercise	Other SSc patients	Intervention: 43 Control: 43	Improvement of hand mobility	11; I	Kristensen, 2019 [133]

Intervention/management strategy	Comparator	N	Aim of management	SD&OA*	Reference
P: Home based self-management programme that consisted of a booklet and information about SSc C: N/A: intraindividual assessment	N/A; intraindividual assessment	Intervention: 22 Control: N/A	Alleviation of pain and improvement of hand mobility	10; R	Landim, 2019 [134]
P: Combined programme with HIIT and resistance training, twice weekly for 12 weeks C: No intervention	Other SSc patients	Intervention: 16 Control: 16	Improvement of microvascular function	11; W	Mitropoulos, 2019 [135]
P: Tai Chi C: Home exercise	Other SSc patients	Intervention: 14 Control: 14	Improvement of physical endurance	11; W	Cetin, 2020 [136]
P: Home-based aerobic exercise (stationary bike), muscular endurance training (upper limbs) and stretching (hands) C: Usual care	Other SSc patients	Intervention: 22 Control: 22	Improvement of functional capacity	11; I	Filippetti, 2020 [137]
P: Self-management programme composed of a booklet C: No intervention	Other SSc patients	Intervention: 40 Control: 17	Improvement of hand mobility	10; I	Landim, 2020 [138]
P: Orofacial exercise programme followed by oral hygiene care advice C: Oral hygiene care advice followed by orofacial exercise programme	Other SSc patients	Intervention: 28 Control: 28	Increase of mouth opening	11; I	Cüzdan, 2021 [139]
P: High-intensity interval exercise (HIIT) C: N/A: intraindividual assessment	N/A; intraindividual assessment	Intervention: 11 Control: N/A	Improvement of physical fitness, hand function and functional impairment	10; I	Defi, 2021 [140]
P: Booklet, isometric hand exercise and self-administrated stretching C: Booklet alone	Other SSc patients	Intervention: 32 Control: 30	Improvement of hand mobility	11; I	Gokcen, 2021 [141]
P: Home exercises for temporomandibular joint, mimic, masticatory and cervical spine muscles C: Home exercises and combined physiotherapeutic procedures performed by a physiotherapist	Other SSc patients	Intervention: 25 Control: 22	Increase of mouth opening	11; W	Maddali Bongi, 2021 [142]
P: Intensive occupational therapy and app-delivered home exercise. C: App alone	Other SSc patients	Intervention: 16 Control: 16	Improvement of hand and upper extremity function	11; W	Murphy, 2021 [143]
Patient education and self-management					
P: Educational programme C: N/A: intraindividual assessment	N/A; intraindividual assessment	Intervention: 6 Control: N/A	Reduction of pain and fatigue	10; I	Samuelson, 2000 [144]
P: Educational programme C: Educational programme	SLE-patients	Intervention: 5 with SSc, 5 with SLE Control: N/A	Improvement of patient education	9; R	Brown, 2004 [36]
P: Multidisciplinary disease management programme C: N/A: intraindividual assessment	N/A; intraindividual assessment	Intervention: 41 Control: N/A	To improve mental health	10; R	Kwakkenbos, 2011 [145]
P: Mail-delivered self-management programme C: N/A: intraindividual assessment	N/A; intraindividual assessment	Intervention: 62 (49 completers, 13 non-completers) Control: N/A	Reduction of pain and fatigue	10; I	Poole, 2013 [146]

Intervention/management strategy	Comparator	N	Aim of management	SD&OA*	Reference
P: Self-management website with 10 modules C: N/A: intraindividual assessment	N/A; intraindividual assessment	Intervention: 16 Control: N/A	To assess the effects of an internet self-management program	10; R	Poole, 2014 [147]
P: Informative meeting followed by occupational therapy C: Informative meeting alone	Other SSc patients	Intervention: 10 Control: 10	Alleviation of activities of daily living	10; R	Zanatta, 2017 [148]
P: Self-management website C: Book	Other SSc patients	Intervention: 134 Control: 133	Improvement of quality of life	11; W	Khanna, 2019 [149]
P: Home based self-management programme that consisted of a booklet and information about SSc C: N/A: intraindividual assessment	N/A; intraindividual assessment	Intervention: 22 Control: N/A	Alleviation of pain	10; R	Landim, 2019 [134]
P: Scleroderma Support group Leader Education (SPIN-SSLED) programme C: N/A: intraindividual assessment	N/A; intraindividual assessment	Intervention: 10 Control: N/A	Delivery of social support	10; R	Thombs, 2019 [150]
P: Face-to-face training + standard information programme (i.e., brochures, DVD) C: Educational materials alone	Other SSc patients	Intervention: 31 Control: 32	Increase of mouth opening	11; I	Uras, 2019 [151]
P: Self-management programme composed of a booklet C: No intervention	Other SSc patients	Intervention: 40 Control: 17	Improvement of hand mobility	10; I	Landim, 2020 [138]
P: Videoconference-based group intervention that provided education and practice with mental health coping strategies C: No intervention	Other SSc patients	Intervention: 86 Control: 86	Reduction of anxiety	11; I	Thombs, 2021 [152]
Bathing and thermal modalities					
P: Paraffin bath and hand exercises C: N/A: intraindividual assessment	N/A intraindividual assessment	Intervention: 17 Control: N/A	Improvement of hand mobility	10 I	Sandqvist, 2004 [113]
P: Hand stretching & hip exercise, ergotherapy, thermal & mud bath, whirlpool therapy, soft tissue massage of the hands and joints C: Same as intervention, but excluding treatment of the hands.	Other SSc patients	Intervention: 31 Control: 22	Improvement of hand mobility	10 R	Horváth, 2017 [126]
P: Thermal modalities, tissue mobilisation, and upper extremity exercises with occupational therapist C: N/A: intraindividual assessment	N/A intraindividual assessment	Intervention: 21 Control: N/A	Improvement of hand mobility	10 R	Murphy, 2018 [131]
P: Taohong Siwu Decoction (TSD) + oral Prednisone (10mg daily) C: Placebo + oral prednisone	Other SSc patients	Intervention: 71 Control: 71	Reduction of skin sclerosis	11 I	Zhou, 2018 [153]
P: Paraffin bath and hand exercises C: Hand exercises without wax bath	Other SSc patients	Intervention: 17 Control: 19	Improvement of hand mobility	11 I	Gregory, 2019 [132]
P: Paraffin bath and hand exercises C: Water bath, hand exercise	Other SSc patients	Intervention: 43 Control: 43	Improvement of hand mobility	11 I	Kristensen, 2019 [133]
P: Intervention 1 (I1): Hand immersion in Bastian CO_2 bath. Intervention 2 (I2): Hand immersion in hot water C: Hand immersion in Bastian CO_2 bath	Other SSc patients and healthy controls	Intervention: 12 in each intervention group Control: 12	Reduction of Raynaud's phenomenon	11 I	Lange, 2019 [154]

Intervention/management strategy	Comparator	N	Aim of management	SD&OA*	Reference
P: Ozone bath, 2 series of 10 days per series with 10 days apart C: N/A: intraindividual assessment	N/A intraindividual assessment	Intervention: 42 Control: N/A	Reduced expression of inflammatory markers	10 I	Nowicka, 2019 [155]
Complementary and alternative medicine					
P: Active phase of study: Transcutaneous Electrical Nerve Stimulation (TENS) Prolonged study phase: Patients trained to use TENS on a specific acupoints at home C: Active phase of study only	Healthy controls	Intervention: 17 Control: 9	Improvement of gastrointestinal symptoms and quality of life	10 W	Sallam, 2007 [156]
P: Deep oscillation, Biofeedback C: No intervention	Other SSc patients	Intervention: Do: 10 Biof: 8 Control: 10	Reduction of Raynaud's Phenomenon	11 W	Sporbeck, 2012 [157]
P: TENS C: N/A: intraindividual assessment	N/A intraindividual assessment	Intervention: 17 Control: N/A	Improvement of neurogastric functioning	10 I	McNearney, 2013 [158]
P: Biofeedback training C: Biofeedback training	Patients with functional faecal incontinence	Intervention: 13 Control: 26	Reduction of faecal incontinence	2 R	Collins, 2016 [159]
P: Taohong Siwu Decoction (TSD) + oral Prednisone C: Placebo + oral prednisone	Other SSc patients	Intervention: 71 Control: 71	Reduction of skin sclerosis	11 I	Zhou, 2018 [153]
P: Received Ciplukan herb (Physalis angulata Linn) 250mg C: Placebo	Other SSc patients	Intervention: 29 Control: 30	Reduction of skin sclerosis	11 I	Dewi, 2019 [160]
P: Tai Chi C: Home exercise	Other SSc patients	Intervention: 14 Control: 14	Improvement of physical endurance	11 W	Cetin, 2020 [136]
P: Holoil (contained Neem oil and Hypericum perforatum) C: Usual care	Other SSc patients	Intervention: 21 Control: 20	Resolution of skin ulcers	2 I	Giuggioli, 2020 [161]
Manual therapy					
P: Connective tissue massage, Mc Mennell joint manipulation and home exercise C: Home exercise programme alone	Other SSc patients	Intervention: 20 Control: 20	Improvement of hand mobility	11 I	Bongi, 2009 [116]
P: Tailored rehabilitation program with manual therapy and exercise C: Educational advice and information about SSc	Other SSc patients	Intervention: 10 Control: 10	Improvement of global health, hand- and mouth mobility	11 W	Maddali Bongi, 2009 [117]
P: Manual lymph drainage (MDL) C: No intervention	Other SSc patients	Intervention: 20 Control: 15	Improvement in hand mobility	11 R	Bongi, 2011 [162]
P: Combined connective tissue massage, Kabat´s technique, kinesitherapy and home mimic exercise program C: Home exercise programme alone	Other SSc patients	Intervention: 20 Control: 20	Increase in mouth opening	11 I	Maddali Bongi, 2011 [119]
P: Daily home programme (warm gloves, Thai massage, stretching) C: Same programme without gloves	Other SSc patients	Intervention: 14 Control: 14	Improvement of hand mobility	11 W	Vannajak, 2014 [163]

Intervention/management strategy	Comparator	N	Aim of management	SD&OA*	Reference
P: Osteopathic manipulative treatment C: N/A: intraindividual assessment	N/A intraindividual assessment	Intervention: 6 Control: N/A	Improvement of hand mobility	4 I	O'Connor, 2016 [164]
P: Hand stretching & hip exercise, ergotherapy, thermal & mud bath, whirlpool therapy, soft tissue massage of the hands and joints C: Same as intervention, but excluding treatment of the hands.	Other SSc patients	Intervention: 31 Control: 22	Improvement of hand mobility	10 R	Horváth, 2017 [126]
P: Manual therapy and physiotherapy, three weeks every year for three years C: N/A: intraindividual assessment	N/A intraindividual assessment	Intervention: 43 Control: N/A	Development of a personalised rehabilitation programme	10 R	Brignoli, 2018 [129]
Dietary therapy and nutrition					
P: Probiotics C: N/A: intraindividual assessment	N/A intraindividual assessment	Intervention: 10 Control: N/A	Improvement of gastrointestinal symptoms and quality of life	10 I	Frech, 2011 [165]
P: Individually adapted nutritional intervention C: N/A: intraindividual assessment	N/A intraindividual assessment	Intervention: 9 Control: N/A	Improvement of nutritional status	10 I	Ortiz-Santamaria, 2014 [166]
P: Medical nutrition therapy C: N/A: intraindividual assessment	N/A intraindividual assessment	Intervention: 18 Control: N/A	Improvement of nutritional status	10 I	Doerfler, 2017 [167]
P: Probiotics C: Placebo	Other SSc patients	Intervention: 19 Control: 21	Improvement of gastrointestinal symptoms	11 I	Low, 2019 [168]
P: Probiotics C: Placebo	Other SSc patients	Intervention: 37 Control: 36	Improvement of gastrointestinal symptoms	11 W	Marighela, 2019 [169]
P: Faecal microbiota transplantation C: Placebo	Other SSc patients	Intervention: 5 Control: 4	Improvement of gastrointestinal symptoms	11 I	Fretheim, 2020 [170]
Phototherapy and laser treatment					
P: Infrared A (IRA) C: N/A: intraindividual assessment	N/A intraindividual assessment	Intervention: 58 Control: N/A	Reduction of Raynaud's phenomenon	10 I	Foerster, 2005 [171]
P: Intense pulsed light (IPL) C: N/A: intraindividual assessment	N/A intraindividual assessment	Intervention: 20 Control: N/A	Resolution of telangiectases	10 R	Murray, 2012 [172]
P: Pulsed dye laser & intense pulsed light (PDL & IPL) C: N/A: intraindividual assessment	N/A intraindividual assessment	Intervention: 19 Control: N/A	Resolution of telangiectases	10 I	Dinsdale, 2014 [173]
P: Pulsed dye laser (PDL) C: N/A: intraindividual assessment	N/A intraindividual assessment	Intervention: 23 Control: N/A	Resolution of telangiectases	4 I	Burillo-Martinez, 2017 [174]
P: Intense pulsed light (IPL) C: N/A: intraindividual assessment	N/A intraindividual assessment	Intervention: 15 Control: 5	Change in skin sclerosis	10 I	Rosholm Comstedt, 2017 [175]
P: Low level light therapy (IR + red + blue) C: N/A: intraindividual assessment	N/A intraindividual assessment	Intervention: 8 Control: N/A	Resolution of skin ulcers	10 R	Hughes, 2019 [176]

Intervention/management strategy	Comparator	N	Aim of management	SD&OA*	Reference
Shockwave therapy					
P: ESWT with pressure pulses C: N/A: intraindividual assessment	N/A intraindividual assessment	Intervention: 30 Control: N/A	Change in skin sclerosis	10 I	Tinazzi, 2011 [177]
P: ESWT C: N/A: intraindividual assessment	N/A intraindividual assessment	Intervention: 8 Control: N/A	Improvement of skin sclerosis	10 I	Belloli, 2013 [178]
P: ESWT for digital ulcers in SSc C: Usual care	Other SSc patients	Intervention: 9 Control: 14	Resolution of skin ulcers	10 I	Saito, 2016 [179]
P: ESWT for digital ulcers in SSc C: N/A: intraindividual assessment	N/A intraindividual assessment	Intervention: 9 Control: N/A	Resolution of skin ulcers	10 I	Saito, 2016 [180]
Healthcare models					
P: Customized intervention for dental hygiene and upper extremity's function C: N/A: intraindividual assessment	N/A intraindividual assessment	Intervention: 17 Control: N/A	Improvement of oral hygiene	10 I	Poole, 2010 [181]
P: Multidisciplinary disease management programme C: N/A: intraindividual assessment	N/A intraindividual assessment	Intervention: 41 Control: N/A	To improve mental health	10 R	Kwakkenbos, 2011 [145]
P: Multidisciplinary team care C: Usual care	Other SSc patients	Intervention: 28 Control: 25	Reduction of functional impairment	11 I	Schouffoer, 2011 [182]
Hyperbaric oxygen or ozone therapy					
P: Hyperbaric oxygen therapy C: N/A: intraindividual assessment	N/A intraindividual assessment	Intervention: 6 Control: N/A	Resolution of skin ulcers	4 I	Mirasoglu, 2017 [183]
P: Oxygen-ozone therapy C: Usual care	Other SSc patients	Intervention: 25 Control: 25	Resolution of skin ulcers	11 W	Hassanien, 2018 [184]
P: Ozone bath, 2 series of 10 days per series with 10 days apart C: N/A: intraindividual assessment	N/A intraindividual assessment	Intervention: 42 Control: N/A	Reduced expression of inflammatory markers	10 I	Nowicka, 2019 [155]
Oral hygiene					
P: Customized intervention for dental hygiene and upper extremity's function C: N/A: intraindividual assessment	N/A intraindividual assessment	Intervention: 17 Control: N/A	Improvement of oral hygiene	10 I	Poole, 2010 [181]
P: Multi-faceted oral health intervention C: Usual care	Other SSc patients	Intervention: 26 Control: 22	Improvement of oral hygiene	11 W	Yuen, 2011 [121]
P: Xylitol chewing gum C: Xylitol mouth rinse	Other SSc patients	Intervention: 6 Control: 7	Improvement of oral hygiene	11 I	Yuen, 2012 [185]
Others					
P: Autologous fat transplantation, two times three months apart C: N/A: intraindividual assessment	N/A intraindividual assessment	Intervention: 10 Control: N/A	Improvement of microstomia	4 I	Onesti, 2016 [186]
P: Neuromuscular taping C: N/A: intraindividual assessment	N/A intraindividual assessment	Intervention: 53 Control: N/A	Improvement of hand mobility	10 I	Parisi, 2017 [187]

Intervention/management strategy	Comparator	N	Aim of management	SD&OA*	Reference
P: Animal-assisted intervention session with multidisiplinary team, weekly for 20 weeks C: C1: alternative social activity (cooking) C2: No intervention	Other SSc patients	Intervention: 14 Control: C1: 14 C2: 14	Management of anxiety	10 I	Fiori, 2018 [188]
P: Application of amniotic membrane to skin ulcers C: N/A: intraindividual assessment	N/A intraindividual assessment	Intervention: 6 Control: N/A	Resolution of skin ulcers	10 I	Frech, 2019 [189]

***Study design and overall appraisal (adapted from the Joanna Briggs Institute Manual for Evidence Synthesis [190]):**

Notation	Study design
1	Analytical cross-sectional study
2	Case-control study
3	Case report
4	Case series
5	Cohort study
6	Diagnostic test accuracy study
7	Economic evaluation
8	Prevalence study
9	Qualitative research
10	Quasi-experimental study
11	Randomised controlled trial
12	Meta-analysis, with or without systematic review

Notation	Overall appraisal
R	Robust
I	Intermediate
W	Weak

Abbreviations:

6MWT: 6 minutes walking test; abPGSGA: Abridged Scored Patient-Generated Subjective Global Assessment; AC: acupuncture; ADL: activities in daily living; ANA: anti-nuclear antibody; aPL: antiphospholipid; AUC: area under the curve; BASS: Body Area Satisfaction Scale; BDI: Beck Depression Inventory; BF: breathing frequency; BF/CBT: Biofeedback-assisted cognitive-behavioural treatment; BMD: bone mineral density; BMI: body mass index; BP: bodily pain; BPI: Brief Pain Inventory; C: intervention/management strategy for the comparator group C3: complement component 3; C4: complement component 4; CASE: Children's Arthritis Self-Efficacy scale; CAT: complementary and alternative therapies; CC: calcinosis cutis; CCL4: chemokine (C-C motif) ligands 4; CECs: circulating endothelial cells; CES-D: Center for Epidemiological Studies-Depression; CT: cardiovascular training; CI: confidence interval; CLASI: cutaneous lupus erythematosus disease area and severity index; CRP: C-reactive protein; DAS28: Disease Activity Score-28; DASH: Disabilities of the Arm, Shoulder and Hand; DHA: docosahexaenoic acid; dsDNA: double-stranded DNA; DU: digital ulcers; ECLAM: European Consensus Lupus Activity Measurement; EPA: eicosapentaenoic acid; EPCs: endothelial progenitor cells; ER admission: emergency room admission; ES: effect size; ESR: erythrocyte sedimentation rate; ESWT: extracorporeal shock wave therapy; FACIT: Functional Assessment of Chronic Illness Therapy; FISI: Fecal Incontinence Severity Index; FMD: flow-mediated dilation; FSS: Fatigue Severity Scale; GFR: glomerular filtration rate; GH: general health; GHQ: General Health Questionnaire; GI: gingival index; GIT score: gastrointestinal tract score; HADS: Hospital Anxiety and Depression Scale; HAMIS: Hand Mobility in Scleroderma; HAQ: Health Assessment Questionnaire; HAQ-DI: HAQ-Disability Index; HDL: high-density lipoprotein; HeiQ: Health Education Impact Questionnaire; Hg: mercury; HOMA IR: Homeostatic Model Assessment for Insulin Resistance; HR: hazard ratio; HR: heart rate; HRQoL: health-related quality of life; hsCRP: high sensitivity C-reactive protein; IFN: interferon; Ig: immunoglobulin; IID: interincisal distance; IL: interleukin; IPL: intense pulsed light; IQR: interquartile range; IRR: incidence rate ratio; ITT: intention-to-treat; LDI: laser Doppler imaging: LDL: low-density lipoprotein; LE: lupus erythematosus; Lstren: lip strength; MN: minimal needling; MASRI: Medication

Adherence Self-Report Inventory; MCID: minimal clinically important difference; METS: metabolic equivalent of task; MH: mental health; MHAQ: Modified Health Assessment Questionnaire; MHISS: Mouth Handicap in Systemic Sclerosis;MI-RSWB: Multidimensional Inventory of Religious/Spiritual Well-Being; MMO: maximal mouth opening; MPO: Myeloperoxidase; MPR: medication possession ratio; mRSS: modified Rodnan Skin Score; MSI: Mental Synthetic Index: MUFA: monounsaturated fatty acids; MxA: myxovirus protein A; Ns: not significant; OCT: optical coherence tomography; P: intervention/management strategy for the population under investigation; PCS: mental component summary; PDL: pulsed-dye laser: PETCO2: end-tidal carbon dioxide pressure; PF: physical functioning; PGA: Physician Global Assessment; PH: physical health; PHP: Patient Hygiene Performance; PROMIS: Patient-Reported Outcomes Measurement Information System; PSI: Physical Synthetic Index; PSQ: Perceived Severity of Stress Questionnaire; PSQI: Pittsburgh Sleep Quality Index; PSS: Perceived Stress Scale; PtGA: Patient Global Assessment; PUFA: polyunsaturated fatty acids; PUVA: psoralen and ultraviolet A; PWC75%/kg: physical working capacity measured at 75% of the predicted maximal heart rate; RCP: respiratory compensation point; RCT: randomised clinical trial; RNP: ribonucleoprotein; ROM: range of motion; RP: role physical; RR: relative risk; RSE: Rosenberg Self-Esteem Scale; RT: resistance training; SDI: SLICC/ACR Damage Index; SE scale: Chronic Disease Self-Efficacy Scale; SEF: second self-efficacy for performing functions; SEOS: Self-Efficacy for controlling Other Symptoms; SEP: Self-Efficacy Perception for controlling pain; SF-36: short-form 36; SF-MPQ: Short-Form McGill Pain Questionnaire; SFA: saturated fatty acids; SFAQ: Scleroderma Functional Assessment Questionnaire; SGRQ: St. George's Respiratory Questionnaire; SIBID: Situational Inventory of Body Image Dysphoria; sICAM: soluble intracellular cellular adhesion molecule; SLAM: Systemic Lupus Activity Measure; SLAQ: Systemic Lupus Activity Questionnaire; SLE: systemic lupus erythematosus; SLEDAI: Systemic Lupus Erythematosus Disease Activity Index; Sm: Smith; SM: Social media; SMILEY: Simple Measure of the Impact of Lupus Erythematosus in Youngsters; SMS: Symptom-monitoring Support; SSc: systemic sclerosis; SSGLSS: Scleroderma Support Group Leader Self-efficacy Scale; Std: standard; sTNFR: soluble tumour necrosis factor receptor; taVNS: Transcutaneous auricular vagus nerve stimulation; TCM: traditional Chinese medicine; TE: expiratory time; TG: triglycerides; TI: inspiratory time; TLR: toll-like receptor; TNF: tumour necrosis factor; TOT: total respiratory time; Tprot: tongue protrusion; Tstren: tongue strength; TUG: Timed Up and Go; UC: usual care; UCLA GIT: University of California Los Angeles Scleroderma Clinical Trials Consortium Gastrointestinal Tract; UVA1: ultraviolet A1; VAS: visual analogue scale; VAT: ventilatory anaerobic threshold; VE/VCO2: ventilatory equivalent for carbon dioxide; VLDL: very low-density lipoprotein; VO2 max: maximal oxygen consumption; VT: tidal volume; VT: vitality; W: week; WHOQOL: World Health Organization Quality of Life Instrument.

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Supplemental Table S2

RESEARCH QUESTION 2: WHICH NON-PHARMACOLOGICAL INTERVENTIONS HAVE BEEN USED?
RESEARCH QUESTION 3: WHICH NON-PHARMACOLOGICAL INTERVENTIONS HAVE BEEN SHOWN TO BE EFFICACIOUS?

Intervention/management strategy	Comparator	N	Results	Efficacy	SD&OA*	Reference
SLE						
Physical exercise and physical activity						
P: Phase I: supervised aerobic exercise at 70-80% of maximum heart rate. Phase II: continue exercise in the supervised setting for 1 month/ unsupervised home exercise programme for 6 months. C: Range of mention/muscle strengthening	Other SLE patients	Intervention: 5 Control: 5	Cardiovascular fitness Exercise (METS) Aerobic: 0.64 (-0.11, 1.39) ROM/MS: 1.25 (0.75, 1.75) p>0.05 Mineral density BMD %T-score (lumbar) change from baseline Aerobic: -0.20 (-2.26, 1.86) ROM/MS: -5.00 (-15.00, 5.00) p>0.05 Disease activity SLAM change from baseline Aerobic: 2.80 (0.90, 4.70) ROM/MS: 0.40 (-2.27, 3.07) p>0.05 Fatigue FSS change from baseline Aerobic: -0.71 (-1.23, -0.18) ROM/MS: -0.68 (-1.22, -0.13) p>0.05 Isometric strength Both groups showed a significant increase in hamstring but not quadriceps strength. No differences between groups. HRQoL SF-36 PCS change from baseline Aerobic: 7.00 (-4.80, 18.80) ROM/MS: 2.5 (-23.11, 28.11) p>0.05	Cardiovascular fitness: Yes/No Mineral density: No Disease activity: No Fatigue: Yes/No Isometric strength: Yes HRQoL: No	11; W	Ramsey-Goldman, 2000 [1]

Intervention/management strategy	Comparator	N	Results	Efficacy	SD&OA*	Reference
P: Exercise group= exercise (walking, cycling, and swimming) Relaxation group= listen to a relaxation audiotape in a darkened, warm, and quiet room C: Relaxation group: listen to relaxation audiotape	Other SLE patients	Intervention: 62 Control: 32	Anxiety Exercise: 7.4 (0.8) 4.6 (0.7) Control: 8.2 (0.8) 5.7 (0.6) p=0.62 Disease Activity (SLAM) Exercise: 4 (3–8) Control: 6 (4–7). p=0.20 Fatigue Exercise: 15 (1.5) 239 (15) Control: 21 (1.6) 283 (14) p=0.05 HRQoL No significant differences in SF-36 PF, RP, VT. Quality of sleep Exercise: 6 (3–9) Control: 8 (5–11). p=0.50 Aerobic capacity No significant differences in test duration, max O2 uptake, max ventilation, max HR, recovery HR.	Anxiety: No Disease Activity (SLAM): No Fatigue: Yes HRQoL: No Quality of sleep: No Aerobic capacity: No	11; I	Tench, 2003 [2]

Intervention/management strategy	Comparator	N	Results	Efficacy	SD&OA*	Reference
P: Supervised aerobic exercise: incremental load on a treadmill C: Usual care	Other SLE patients	Intervention: 41 Control: 19	Aerobic capacity Training: Improvement in max exercise tolerance, VO2 max, anaerobic threshold, max ventilation and Borg scale from baseline. Greater improvements than control in anaerobic threshold. HRQoL Training: Improvement in all scales but SF-36 BP from baseline. Greater improvements than control in SF-36 PF and VT Depression Training: pre: 2.0 (2.7) post: 1.7 (2.7) Control: pre: 2.5 (2.7) post: 3.0 (3.5) P intragroup: 0.47 intergroup: 0.10 Pain Training: pre: 8.4 (12.8) post: 2.9 (3.0) Control: pre: 5.8 (6.4) post: 6.6 (8.5) P intragroup: <0.001 intergroup: 0.15 Fatigue Training: pre: 3.6 (1.5) post: 3.3 (1.3) Control: pre: 3.3 (1.3) post: 3.3 (1.5) P intragroup: <0.001 intergroup: 0.10 HAQ Training: pre: 0.14 (0.21) post: 0.06 (0.19) Control: pre: 0.23 (0.27) post: 0.38 (1.14) P intragroup: 0.01 intergroup: 0.03	Aerobic capacity: Yes HRQoL: Yes Depression: No Pain: Yes/No Fatigue: Yes/No HAQ: Yes	10; I	Carvalho, 2005 [3]
P: Supervised aerobic exercise: walking on a treadmill for a 3-month programme C: N/A: intraindividual assessment	N/A; intraindividual assessment	Intervention: 6 Control: -	Disease activity No significant changes in SLEDAI, CRP and ESR after exercise. Aerobic capacity VO2 max increased after exercise compared with baseline (p=0.05) HRQoL No significant changes in SF-36 pain score (p=0.1) and MHAQ score (p=0.08). Fatigue SF-36 VT score improved after exercise compared with baseline (p=0.03)	Disease activity: No Aerobic capacity: Yes HRQoL: No Fatigue: Yes	10; R	Clarke-Jenssen, 2005 [4]

Intervention/management strategy	Comparator	N	Results	Efficacy	SD&OA*	Reference
P: Cardiorespiratory exercise test carried out on a treadmill C: No	Healthy controls	Intervention: 20 Control: 20	Ventilatory efficiency BF, BF/VT, VE/VCO2: significantly higher in SLE patients vs controls (p<0.05). VT, TE, TI, TOT, PETCO2: significantly lower in SLE patients vs controls (p<0.05).	Ventilatory efficiency: N/A	1; R	do Prado, 2011 [5]
P: Program of increasing exercise from 100 to 300 min/week (combined with reduced-calorie diet) C: N/A: intraindividual assessment	N/A; intraindividual assessment	Intervention: 15 Control: -	Body composition Weight (kg): - 8.2 (2.0) kg from baseline p<0.05 Waist circumference (cm) = -10.8 (4.9) cm from baseline p<0.05 Physical activity Physical activity (min/session): +25.6 min/session from baseline p<0.05	Body composition: Yes Physical activity: Yes	10; W	Otto, 2011 [6]
P: Home exercise program using WII Fit interactive video game for 10 weeks C: N/A: intraindividual assessment	N/A; intraindividual assessment	Intervention: 15 Control: -	Body composition Weight (kg): baseline: 75.4 (17.4) after Wii: 73.6 (16.9) p=0.01 Waist circumference (cm): baseline: 90.8 (16.4) after Wii: 88.0 (15.2) p=0.01 Anxiety/Depression HADS anxiety: baseline: 8.5 (3.4) after Wii: 7.0 (3.0) p=0.03 HADS depression: baseline: 5.9 (3.9) after Wii: 4.6 (2.8) p=0.08 Fatigue FSS: baseline: 53.9 (7.2) after Wii: 44.0 (11.2) p=0.002 Pain SF-MPQ total index: baseline: 7.1 (9.5) after Wii: 3.8 (7.7) p=0.06 SF-MPQ overall intensity: baseline: 1.0 (1.1) after Wii: 0.4 (0.7) p=0.04 Sleep PSQI: baseline: 9.2 (3.6) after Wii: 4.6 (2.8) p=0.07	Body composition: Yes Anxiety/Depression: Yes/No Fatigue: Yes Pain: Yes Sleep: No	10; R	Yuen, 2011 [7]

Intervention/management strategy	Comparator	N	Results	Efficacy	SD&OA*	Reference
P: Supervised training sessions: 35–40 minutes of resistance, 30 minutes of treadmill aerobic training, and 5 minutes of stretching exercises. C: Usual care	Other SLE patients	Intervention: 14 Control: 10	Chronotropic reserve Chronotropic reserve: SLE trained: baseline: 81.3 (15.0) post: 95.4 (9.2). SLE non-trained: baseline: 76.1 (18.1) post: 75.6 (16.6) P intragroup<0.05 P intergroup<0.05. Heart rate recovery: SLE trained: baseline: 24.1 (9.8) post: 40.9 (10.3). SLE non-trained: baseline: 25.4 (12.8) post: 26.7 (9.3) P intragroup<0.05 P intergroup<0.05.	Chronotropic reserve: Yes	11; W	Miossi, 2012 [8]
P: Ergospirometric test C: No	Healthy controls	Intervention: 27 Control: 30	Inflammatory markers No differences in IL-6, IL-10 and TNF-a after exercise compared to baseline.	Inflammatory markers: No	10; I	da Silva, 2013 [9]
P: Supervised walking at a heart rate corresponding to the VT1 threshold. C: Usual care	Other SLE patients	Intervention: 18 Control: 20	Disease activity (SLEDAI) Exercise: baseline: 2.0 (2.1) post: 2.4 (2.3) Control: baseline: 2.4 (2.3) post: 3.1 (5.3) P intragroup=0.196 P intergroup: 0.652 Vascular function Flow mediated dilation (%) Exercise: baseline: 6.3 (6.7) post: 14.1 (9.1) p=0.006 Control: baseline: 8.4 (8.2) post: 9.4 (5.7) p=0.598 Nitro-glycerine-mediated dilation Exercise: baseline: 20.9 (6.1) post: 24.3 (7.9) p=0.147 Control: baseline: 26.7 (7.1) post: 26.1 (7.0) p=0.782 Aerobic capacity Improvement in exercise group, but not in controls, in exercise tolerance (min), maximum speed (km/h) and speed VT1, but not in resting HR, VO2 max, HRmax and VE max.	Disease activity (SLEDAI): No Vascular function: Yes/No Aerobic capacity: Yes/No	10; R	dos Reis-Neto, 2013 [10]

Intervention/management strategy	Comparator	N	Results	Efficacy	SD&OA*	Reference
P: Walking, running, cycling, or use of an elliptical machine. C: No	Other SLE patients, healthy controls	Intervention: 14 Control: 12	Disease activity SLAQ global score: Sedentary: 1.5 (0.3) Physically active:0.9 (0.3) p>0.05 SLAQ numerical rating: Sedentary: 5.6 (0.8) Physically active: 3.2 (0.6) p<0.05 SLAQ symptom score: Sedentary: 4.1 (1.3) Physically active: 0.8 (0.4) p<0.05 Inflammatory markers CRP: Sedentary: 4.4 (0.9) Physically active: 1.4 (0.4) p<0.05 sICAM-1: Sedentary: 185.8 (24.9) Physically active: 131.2 (9.9) p<0.05 No differences between groups in IL-6, IL-10, IL-12 and TNF-a Vascular function FMD: No significant differences between sedentary and physically active SLE patients. However, sedentary SLE patients had lowed FMD than healthy controls [3.6 (1.3) vs. 8.1 (1.2) p<0.05], but not the physically active SLE group (p=0.73).	Disease activity: Yes Inflammatory markers: Yes/No Vascular function: Yes/No	1; I	Barnes, 2014 [11]

Intervention/management strategy	Comparator	N	Results	Efficacy	SD&OA*	Reference
P: Treadmill walking C: No	Healthy controls	Intervention: 8 Control: 10	Aerobic capacity Improvement in time in ventilatory anaerobic threshold, respiratory compensation point, time to exhaustion and HR peak, but not VO2 peak after exercise programme, compared with baseline. Body composition BMI: baseline: 25.2 (2.6) post: 24.8 (2.1). p>0.05 Disease activity SLEDAI: baseline: 1.3 (1.1) post: 0.9 (1.0). p>0.05 Fatigue FSS: baseline: 33.4 (14.4) post: 26.4 (10.2). p<0.05 Inflammatory markers Resting cytokine levels: No differences between exercise and control groups in IFN-gamma, IL-10, IL-6, TNF-a and sTNFR1/2. After a single bout of acute moderate or intense aerobic exercise: lower AUC IL-10 group for exercise vs control group. No differences for other cytokines. HRQoL SF-36: No significant differences in any subscale after exercise programme, compared with baseline.	Aerobic capacity: Yes Body composition: No Disease activity: No Fatigue: Yes Inflammatory markers: Yes/No HRQoL: No	10; I	Perandini, 2014 [12]
P: Seven strength exercises for the major muscle groups followed by aerobic exercise on a treadmill. C: Usual care	Other SLE patients, healthy controls	Intervention: 17 Control: 16	Lipid profile No significant changes in plasma total/HDL/LDL/VLDL cholesterol, insulin or glucose levels after intervention.	Lipid profile: No	11; W	Benatti, 2015 [13]

Intervention/management strategy	Comparator	N	Results	Efficacy	SD&OA*	Reference
P: Aerobic training on a bicycle ergometer, for 6 weeks. C: N/A: intraindividual assessment	N/A; intraindividual assessment	Intervention: 30 Control: 30	Depression (BDI) BDI moderate or severe depression Aerobic training: baseline: 70% post: 10% p<0.001 Isotonic exercise: baseline: 70% post: 6.6% p<0.001 Fatigue (FSS) Aerobic training: baseline: 53.6 (6.3) post: 29.2 (7.9) p<0.001 Isotonic exercise: baseline: 53.6 (6.3) CG after activity: 29.2 (7.9) p<0.001 [the reported values are indeed the same] HRQoL (SF-36) BDI moderate or severe depression Aerobic training: baseline: 70% post: 10% p<0.001 Isotonic exercise: baseline: 70% post: 6.6% p<0.001	Depression (BDI): Yes Fatigue (FSS): Yes HRQoL (SF-36): Yes	11; W	Bogdanovic, 2015 [14]
P: Two single bouts of acute aerobic exercise (moderate and intense) performed in a treadmill C: No	Other SLE patients, healthy controls	Intervention: 23 Control: 10	Inflammatory markers Higher levels of TNF-a and sTNFR1-2 in patients with inactive vs active disease. No significant differences in IFN-gamma, IL-6 or IL-10. Changes were transient and reached baseline levels after 24h recovery.	Inflammatory markers: N/A	10; I	Perandini, 2015 [15]

Intervention/management strategy	Comparator	N	Results	Efficacy	SD&OA*	Reference
P: Walking and bicycle vs free weight and elastic bands exercises 3 times/week for 12 weeks C: Usual care	Other SLE patients	Intervention: 21 Control: 21	Depression (BDI) Cardiovascular training: baseline: 20.6 (5.3) post: 20.1 (7.1). p>0.05 Resistance training: baseline: 19.4 (5.0) post: 17.3 (4.4). p>0.05 Control: baseline: 19.1 (5.6) post: 20.1 (5.9). p<0.05 Disease activity (SLEDAI) Cardiovascular training: baseline: 1.8 (0.6) post: 1.6 (0.9). p>0.05 Resistance training: baseline: 1.4 (0.6) post: 1.3 (0.5). p>0.05 Control: baseline: 2.3 (1.7) post: 1.2 (0.4). p<0.05 HRQoL (SF-36) Cardiovascular training: significant improvement in all SF-36 subscales. Greater improvements than control in SF-36 RP and VT. Resistance training: significant improvement in all SF-36 subscales but VT. Physical function (12-min walk test) Cardiovascular training: baseline: 1020 (225) post: 1406 (257). p<0.05 Resistance training: baseline: 911 (172) post: 1140 (173). p<0.05 Control: baseline: 936 (169) post: 1068 (187). p<0.05 CT vs control: p<.0.001 RT vs control: p=0.001	Depression (BDI): No Disease activity (SLEDAI): No HRQoL (SF-36): Yes Physical function (12-min walk test): Yes	11; I	Abrahao, 2016 [16]
P: Endurance exercises (walking or bicycle) + strengthening exercises (with elastoband or weights for both upper and lower limbs) C: Usual care	Other SLE patients	Intervention: 15 Control: 18	Fatigue (FSS) Supervised training: reduction in FSS score at month 3 (p=0.007) and 9 (p=0.003) compared with baseline. Home training reduction in FSS score at month 3 (p=0.003) and 9 (p=0.035) compared with baseline. Control: no significant differences in FSS score at month 3 and 9 compared with baseline. [values not reported only box plots]. Physical capacity Physical working capacity (PWC75%/kg) and the Borg scale did not improve over time in none of the 3 groups, nor at month 3, neither at month 9.	Fatigue (FSS): Yes Physical capacity: No	11; W	Avaux, 2016 [17]

Intervention/management strategy	Comparator	N	Results	Efficacy	SD&OA*	Reference
P: 0 to 3 months: high + low-moderate intensity aerobic exercise + education+ individual coaching. 4 to 12 months: high + low-moderate intensity aerobic exercise + individual coaching C: Usual care	Other SLE patients	Intervention: 18 Control: 17	Aerobic capacity Exercise group: significant improvement in VO2 max, 60% max and 80% max at month 12 compared with baseline. No significant differences between exercise and control groups. Disease activity Exercise: baseline 1 (0–8) month 12 4 (2–6) Control: baseline 2 (0–3) month 12 2 (0–5) P: intragroup=0.25 intergroup: 0.14. HRQoL No significant improvement in SF-36 subscales in the exercise and control groups at month 12 compared with baseline. Exercise group showed a greater improvement in SF-36 MH than control (group x time p value= 0.05) Organ Damage No significant increase in SDI score in exercise and control groups. No significant differences between groups at month 12. Physical activity The frequency of self-reported physical activity at high intensity increased for the exercise and control groups at month 12 compared with baseline.	Aerobic capacity: Yes/No Disease activity: No HRQoL: No Organ Damage: No Physical activity: Yes	11; I	Bostrom, 2016 [18]
P: Single bout of acute aerobic exercise performed 72 hours after a cardiopulmonary exercise test to determine VAT and RCP C: No	Other SLE patients, healthy controls	Intervention: 8 Control: 4	Inflammatory markers SLEinactive and HC group=down-regulation of innate immunity genes (IL13-IL2-IL18-CCL5) and TLR-related pathway genes at End-ex (up-regulated at baseline) + up-regulation of JAK/STAT in recovery SLEactive= fewer genes down-regulated related to both innate and adaptive immunity (IL2, IFNG,IL18,IL13,GATA3,CCL4) + fewer genes up-regulated in recovery ,resulting in a less connected network.	Inflammatory markers: Yes	10; I	Perandini, 2016 [19]

Intervention/management strategy	Comparator	N	Results	Efficacy	SD&OA*	Reference
P: Various modalities: aerobic exercise programme, resistance training, multi-component interventions. C: N/A	N/A	6 RCTs and 5 quasi-RCTs	Aerobic capacity Exercise groups: significant increase compared with control group (mean difference: = 1.85, 95%CI: (1.12, 2.58), p<0.001) Depression Exercise groups: significant decrease compared with control group (mean difference: = –0.40, 95%CI (–0.71, –0.09), p=0.01) Disease activity Exercise groups: no significant changes compared with control (mean difference: = 0.01, 95%CI: (–0.54, 0.56), p=0.97) Fatigue Exercise groups: significant decrease compared with control group (mean difference: = –0.61, 95%CI: (–1.19, –0.02), p=0.04)	Aerobic capacity: Yes Depression: Yes Disease activity: No Fatigue: Yes	12; R	O'Dwyer, 2017 [20]
P: Aerobic exercise (treadmill, walking/cycling/swimming) C: N/A	N/A	3 studies: 2 RCT, 1 quasi-experimental	Fatigue Exercise groups: significant decrease compared with control group (mean difference: = –0.52, 95%CI: (–0.91, –0.13), p=0.009)	Fatigue: Yes	12; R	Wu, 2017 [21]

Intervention/management strategy	Comparator	N	Results	Efficacy	SD&OA*	Reference
P: Supervised treadmill aerobic training C: No	Other SLE patients	Intervention: 9 Control: 10	Aerobic capacity Exercise group: significant increases in VAT, time at RCP, time to exhaustion and HR peak, but not VO2 peak compared with control. Body composition Body weight (kg): Exercise: baseline 65.0 (10.5) post: -0.3 (-1.7–1.1) p=0.6 Control: baseline 67.6 (8.8) post: 0.2 (-1.2–1.5). Fat mass (kg): Exercise: baseline 21.7 (6.5) post: 0.1 (-0.9–1.1) p=0.7 Control: baseline 22.8 (4.8) post: -0.2 (-1.3–0.9). Food Intake No significant differences in change of caloric or macronutrients intake between exercise and control groups. Insulin sensitivity Exercise group: greater decreases in fasting insulin, AUC insulin, HOMA IR and fasting free fatty acids, and greater increases in Matsuda index and fasting glucagon, compared with control. No differences in fasting glucose, AUC glucose, fasting proinsulin and insulinogenic index.	Aerobic capacity: Yes Body composition: No Food Intake: No Insulin sensitivity: Yes	11; W	Benatti, 2018 [22]
P: Hatha yoga classes (deep breathing, relaxation, meditation, poses for strength, flexibility, and balance) + encouragement to home practice for 8 weeks C: N/A: intraindividual assessment	N/A; intraindividual assessment	Intervention: 7 Control: -	Relaxation Exit interviews (mentions)= benefits: 10 feeling of general well-being: 2 enjoyment: 3 Personal journals (mentions)= benefits:21 expectation of future benefits: 7 feeling of general well-being: 7	Relaxation: Yes	9; W	Middleton, 2018 [23]

Intervention/management strategy	Comparator	N	Results	Efficacy	SD&OA*	Reference
P: Aerobic exercise on a treadmill C: Guidelines about healthy lifestyle	Other SLE patients	Intervention: 26 Control: 32	Inflammatory markers Exercise group: No significant differences in change from baseline in hsCRP, TNF-alfa, IL-6, MPO compared with control. Physical fitness Increase in Bruce (min) Exercise: 2.49 (0.44) Control: 0.22 (0.41) p=0.001 Vascular function Change in Pulse wave velocity (m/s) Exercise: -0.26 (0.14) Control: -0.22 (0.13) p=0.860	Inflammatory markers: No Physical fitness: Yes Vascular function: No	10; I	Soriano-Maldonado, 2018 [24]
P: Kinesiotherapy protocol for 4 months C: Usual care	Other SLE patients	Intervention: 5 Control: 9	Body composition Kinesiotherapy: no significant changes from baseline in anthropometric measurements. Control: increase in abdominal circumference [baseline: 84.5 (81.5-102.0) post: 85.0 (82.8-102.5) p=0.039], no significant changes from baseline in other anthropometric measurements. HRQoL Kinesiotherapy: Improvement in SF-36 BP no significant changes from baseline in other subscales. Control: no significant changes in any SF-36 subscales. Inflammatory markers Kinesiotherapy: no significant changes from baseline in IL-2, IL-5, IL-6, IL-8, IL-10 and TNF-a. Control: significant decrease in IL-5, IL-6 and IL-10. Strength and flexibility Kinesiotherapy: Improvement in Wells test (cm) no significant changes from baseline in bench press, leg extension, lying legs curls and stretching test. Control: no significant changes in any strength and flexibility tests.	Body composition: No HRQoL: No Inflammatory markers: No Strength and flexibility: No	10; R	Timoteo, 2018 [25]

Intervention/management strategy	Comparator	N	Results	Efficacy	SD&OA*	Reference
P: Aerobic exercise C: N/A	N/A	2 RCTs	HRQoL Exercise groups: significant improvement in SF-36 physical functioning (mean difference: = –9.20, 95%CI (-18.16, -0.23), p=0.04), but not in vitality.	HRQoL: Yes/No	12; R	da Hora, 2019 [26]
P: Walk With Ease (WWE) programme C: Did not complete intervention	Other SLE patients	Intervention: 48 Control: 27	Fatigue FACIT-Fatigue: baseline: 27.9 (29.3) post: 32.8 (30.5) ES: 0.16 (-0.24–0.57) VAS Fatigue: baseline: 49.5 (71.0) post: 33.4 (71.0). ES 0.23 (-0.19–0.64) Pain VAS Pain: baseline: 41.7 (67.2) post: 33.5 (65.5). ES 0.12 (-0.28–0.53) Patient satisfaction 97.9% satisfied with programme, 97.9% confidence to continue physical activity, 80.4% increased physical activity.	Fatigue: NA Pain: NA Patient satisfaction: Yes	10; I	Sheikh, 2019 [27]
P: Wearing of pedometer + face-to-face physical activity counselling + follow up phone calls C: Usual care	Other SLE patients	Intervention: 38 Control: 38	Fatigue FSS Counselling: baseline 3.4 (1.5) Control: baseline 3.5 (1.7). T12 vs T10 (group x time): B -0.14 p=0.64 HRQoL Greater improvements at week 12 in SF-36 VT scores in counselling versus control group no differences for other subscales. Sleep PSQI Counselling: baseline 6.6 (3.2) Control: baseline 6.2 (3.3). T12 vs T10 (group x time): B -1.24 p<0.01 Physical activity Daily steps Counselling: baseline 5820 intervention: 7129 Control: baseline 2941 intervention: 6227 p<0.001	Fatigue: No HRQoL: Yes/No Sleep: Yes Physical activity: Yes	11; I	Wu, 2019 [28]

Intervention/management strategy	Comparator	N	Results	Efficacy	SD&OA*	Reference
P: Moderate to vigorous intensity aerobic exercise C: Physical activity guidelines and basic nutritional information	Other SLE patients	Intervention: 26 Control: 32	Depressive symptoms BDI change Exercise: -4.03 (1.81) Control: .2.25 (1.59). p=0.475 Fatigue General fatigue change Exercise: -2.57 (1.07) Control: 0.29 (0.94). p=0.049 HRQoL PCS change Exercise: 2.83 (2.15) Control: 0.49 (2.06). p=0.448 MCS change Exercise: 6.51 (2.63) Control: 2.12 (2.47). p=0.237 Psychological stress PSS change Exercise: -1.6 (1.2) Control: -1.2 (1.06). p=0.805 Sleep PSQI change Exercise: -0.63 (0.73) Control: -0.96 (0.66). p=0.744	Depressive symptoms: No Fatigue: Yes HRQoL: No Psychological stress: No Sleep: No	10; I	Gavilan-Carrera, 2020 [29]
P: Strengthening and stretching upper limb exercises C: Four sessions of training in alternative methods of performing daily activities, use of aids, joint protection and energy conservation	Other SLE patients	Intervention: 31 Control: 27	DASH Exercise w0: 39.02 (16.10) w12: 21.49 (16.19). p<0.001 Control w0: 43.08 (16.39) w12: 38.38 (16.29). p=0.058 HAQ Exercise w0: 0.81 (0.45) w12: 0.45 (0.45). p<0.001 Control w0: 1.10 (0.55) w12: 1.04 (0.49). p=0.420 HRQoL LupusQoL PH Exercise w0: 56.44 (22.62) w12: 72.95 (21.54). p<0.001 Control w0: 51.25 (20.62) w12: 53.33 (22.12). p=0.527 Physical fitness Exercise group: improvement in grip strength, pinch strength and Purdue test at week 12 compared with baseline (p<0.001 for all). Control group: improvement in Purdue test at week 12 compared with baseline (p=0.001). No differences in other variables.	DASH: Yes HAQ: Yes HRQoL: Yes Physical fitness: Yes	11; W	Keramiotou, 2020 [30]
P: Whole body vibration exercises (WBVE) C: Whole body vibration exercise	Healthy controls	Intervention: 18 Control: 9	Muscle activation Increase in 100-200% in muscle activation at 30 Hz compared with 0 Hz p<0.05 for Vastus lateralis.	Muscle activation: Yes	11; I	Dionello, 2021 [31]

Intervention/management strategy	Comparator	N	Results	Efficacy	SD&OA*	Reference
P: Home-based moderate-intensity aerobic exercise and resistance training. C: Usual care	Other SLE patients	Intervention: 12 Control: 11	Physical fitness Fitness index: improvement at 12 weeks in intervention group (p=0.042) but not in the control group (p=1.0) Go/no-go test: improvement in reaction time (p=0.036) and performance index (p=0.024) at 12 weeks in intervention group (p=0.042) but not in the control group.	Physical fitness: Yes	10; I	Kao, 2021 [32]
P: Whole body vibration exercises (WBVE) C: Isometry training programme	Other SLE patients	Intervention: 11 Control: 10	Fatigue Mean difference in FACIT-F score: 6.63 (0.64-12.60) p=0.03 Functional ability No significant changes in TUG scores Functional impairment No significant changes in HAQ scores HRQoL No significant changes in SF-36 scores	Fatigue: Yes Functional ability: No Functional impairment: No HRQoL: No	11; W	Lopes-Souza, 2021 [33]
P: No intervention. Exposure: sedentary behaviour, as per one item from the Rapid Assessment of Physical Activity (RAPA). C: Self-reported physical activity	Other SLE patients	Intervention: 41 Control: 184	Depression Adjusted Risk of Incident Depression= Intervention group (physically Inactive): 3.88 (95% Confidence interval =1.67, 9.03) Control group (physically Active): 1 Disease activity SLEDAI= physically Inactive: 2.6(2.7) physically Active: 2.9(3.0) Organ damage SDI= physically Inactive: 2.2 (2.1) physically Active: 1.7 (1.9)	Depression: Yes Disease activity: Organ damage:	5; R	Patterson, 2021 [34]
Patient education and self-management						

Intervention/management strategy	Comparator	N	Results	Efficacy	SD&OA*	Reference
P: Attend a self-management course C: Usual care	Other SLE patients	Intervention: 21 Control: 20	Fatigue IG: before intervention: 27.7 (10.3) after intervention: 24.8 (10.4) CG: before intervention: 21.7 (9.6) after intervention: 25.5 (10.1) p=0.049 Depression IG: before intervention:12.8 (9.1) after intervention: 11.1 (9.0) CG: before intervention: 8.3 (7.3) after intervention: 10.9 (5.0) p=0.025 Pain No significant differences in the mean scores for pain p=0.469 Self-efficacy Self-efficacy improved after the intervention p=0.001 Coping skills IG: before intervention: 65.2 (19.8) after intervention: 68.2 (20.3)/ CG: before intervention:71.7 (16.1) after intervention: 68.6 (16.3) p=0.007	Fatigue: Yes Depression: Yes Pain: No Self-efficacy: Yes Coping skills: Yes	10; I	Sohng, 2003 [35]
P: Educational programme C: Educational programme	SSc patients	Intervention: 5 with SSc, 5 with SLE Control: N/A	Overall satisfaction with both programmes, however SLE revealed a more positive feeling about their attendance. Both groups felt that it was valuable to meet individuals with the same disease and welcomed an educator within the program planning team. Both groups were unanimously satisfied with the content and format. Behaviour-wise, SLE patients revealed more definite life changes than SSc patients.	Yes	9; R	Brown, 2004 [36]

Intervention/management strategy	Comparator	N	Results	Efficacy	SD&OA*	Reference
P: Attend a psychoeducational group combining functional strategy training and psychosocial support (MINDFULL program) C: N/A: intraindividual assessment	N/A; intraindividual assessment	Intervention: 17 Control: -	Depression BDI: improved from 16.3 (9.5) to 10.9 (5.0) p=0.022 Metamemory before MINDFULL: 3.42 (0.14) after MINDFULL: 3.65 (0.20) p=0.00003 Memory Functioning Kinds of memory problems 2.88 (0.96) 3.94 (0.85) p=0.003 Frequency of forgetting 4.16 (0.58) 4.47 (0.81) p=0.123 Seriousness of forgetting 2.98 (0.68) 3.10 (0.85) p=0.649 Mnemonic usage 2.30 (0.88) 1.84 (0.59) p=0.032 Retrospective functioning 2.29 (0.97) 3.08 (1.29) p=0.020	Depression: Yes Metamemory: Yes Memory Functioning: Yes/ No	10; I	Harrison, 2005 [37]
P: Take part in a patient education program C: N/A: intraindividual assessment	N/A; intraindividual assessment	Intervention: 13 Control: -	Quality of life General health= from 47.3 (17.5) to 56.0 (13.2) p=0.029 Mental health= from 76.7 (SD 16.3) to 84.0 (10.9) p=0.091 Pain Non-significant (no detailed data provided) Fatigue Non-significant (no detailed data provided) Physical well-being Non-significant (no detailed data provided)	Quality of life: Yes/No Pain: No Fatigue: No Physical well-being: No	9; R	Miljeteig, 2009 [38]
P: Attend the Chronic Disease Self-Management Program (CDSMP) C: N/A: intraindividual assessment	N/A; intraindividual assessment	Intervention: 45 Control: -	Quality of life Mean change=2.4, p=0.032 Self-efficacy Mean change=0.5, p=0.035 Self-management behaviours Mean change=0.3, p=0.036	Quality of life: Yes Self-efficacy: Yes Self-management behaviours: Yes	10; I	Drenkard, 2012 [39]

Intervention/management strategy	Comparator	N	Results	Efficacy	SD&OA*	Reference
P: Education regarding SLE and its management including lifestyle modifications C: Usual care	Other SLE patients	Intervention: 21 Control: 20	Medication adherence Test group: pre-counselling: 3 post-counselling: 5.8 Control group: pre-counselling: 2.9 post-counselling: 4.6 p<0.05 Medication knowledge Test group: m0: 5.52 m2: 16.13 Control group: m0 6.68 m2: 7.54 p<0.001	Medication adherence: Yes Medication knowledge: Yes	11; W	Ganachari, 2012 [40]
P: Standardised daily cellular text message reminders (CTMR) for HCQ intake as prescribed + printed information sheet C: Usual care	Other SLE patients	Intervention: 19 Control: 22	Medication adherence No improvement in HCQ blood levels Visit adherence Visit adherence improved significantly by > 80% among those who were non adherent to clinic visits at baseline (p=0.01) Disease activity No significant changes	Medication adherence: No Visit adherence: Yes Disease activity: No	11; W	Ting, 2012 [41]
P: Take part in BLESS (Balancing Lupus Experience with Stress Strategies) study C: Usual care	Other SLE patients	Intervention: 15 Control: 15	Health distress Mean difference Post intervention= IG: -0.94 CG: 0.31 Self-efficacy Mean difference Post intervention= IG:19.17 CG: -3.21 Depression Mean difference Post intervention= IG: -7.21 CG: 2.89 Anxiety Mean difference Post intervention= IG: 0.58; CG: −1.81	Health distress: Self-efficacy: Depression: Anxiety:	11; W	Williams, 2014 [42]

Intervention/management strategy	Comparator	N	Results	Efficacy	SD&OA*	Reference
P: 0 to 3 months: high + low-moderate intensity aerobic exercise + education+ individual coaching. 4 to 12 months: high + low-moderate intensity aerobic exercise + individual coaching C: Usual care	Other SLE patients	Intervention: 18 Control: 17	Aerobic capacity Exercise group: significant improvement in VO2 max, 60% max and 80% max at month 12 compared with baseline. No significant differences between exercise and control groups. Disease activity Exercise: baseline 1 (0–8) month 12 4 (2–6) Control: baseline 2 (0–3) month 12 2 (0–5) P: intragroup=0.25 intergroup: 0.14. HRQoL No significant improvement in SF-36 subscales in the exercise and control groups at month 12 compared with baseline. Exercise group showed a greater improvement in SF-36 MH than control (group x time p value= 0.05) Organ Damage No significant increase in SDI score in exercise and control groups. No significant differences between groups at month 12. Physical activity The frequency of self-reported physical activity at high intensity increased for the exercise and control groups at month 12 compared with baseline.	Aerobic capacity: Yes/No Disease activity: No HRQoL: No Organ Damage: No Physical activity: Yes	11; I	Bostrom, 2016 [18]
P: 3 phases targeted nursing C: Regular specific nursing	Other SLE patients	Intervention: 58 Control: 58	Medication adherence Compliance score= 15.6(2.2). Significantly high in comparison with patients of the regular special nursing group P value= 0.033 Disease activity Target group: 6.2 (1.3) Control group: 8.4 (1.5) P value= 0.026 Organ damage Target group: 18.5 (4.2) Control group: 27.2 (4.6) P value=0.023 Quality of life (Does not mention which item of the SF-36) Target group: 86.9 (15.5) Control group: 72.4 (12.6) P value= 0.026	Medication adherence: Yes Disease activity: Yes Organ damage: Yes Quality of life: Yes	11; W	Zhang, 2016 [43]

Intervention/management strategy	Comparator	N	Results	Efficacy	SD&OA*	Reference
P: Take part in FAME (Fatigue and Activity Management Education) = 1 h group education / 1 h individual goal C: N/A: intraindividual assessment	N/A; intraindividual assessment	Intervention: 21 Control: -	Fatigue nonsignificant improvements T1/T2 p=.370 T2/T3 p=1.000 T1/T3 p=0.306 Self-Efficacy nonsignificant improvements T1/T2 p=0.126 T2/T3 p=0.4572 T1/T3 p=0.056 Anxiety nonsignificant improvements T1/T2 p=0.722 T2/T3 p=0.229 T1/T3 p=0.342 Depression T1 median:6 T3 median:4 T1/T3 p=0.050 Quality of life Category "burden to others": T1 median 53.17 T2 median: 63.10 T3 median: 55 T1/T2=0.046 T2/T3= 0.033 Category "fatigue": T1 median 38.99 T2 median: 44.94 T3 median: 34.58 T1/T2 p=0.016 T2/T3 p=0.044 T1/T3 p=0.860	Fatigue: No Self-Efficacy: No Anxiety: No Depression: Yes Quality of life: Yes/No	10; I	O'Riordan, 2017 [44]
P: 3-year CVD prevention counselling program C: N/A: intraindividual assessment	N/A; intraindividual assessment	Intervention: 121 Control: -	CVD risk Systolic blood pressure improvement (-6.12 +/- 2.16 mm Hg p<0.05) Prevalence of abnormal cholesterol profile decreased with significant improvements in mean HDL (+5.4 +/- 0.36 mg/dl p<0.0001) and triglyceride levels (-12.6 +/- 5.40 mg/dl p<0.05)	CVD risk: Yes	10; I	Yelnik, 2017 [45]
P: Session of mentoring C: N/A: intraindividual assessment	N/A; intraindividual assessment	Intervention: 36 Control: -	Self-care agency Improved by 19.93% Self-care activity Improved by 17.53% Quality of life Improved by 12.19%.	Self-care agency: Yes Self-care activity: Yes Quality of life: Yes	10; I	Kusnanto, 2018 [46]

Intervention/management strategy	Comparator	N	Results	Efficacy	SD&OA*	Reference
P: Follow a web-based educational program + answer module questions on an online social media forum with other participants C: Usual care	Other SLE patients	Intervention:13 Control: 14	Medication adherence (to HCQ) MPR: SM group: w0: 0.75(0.06) w6: 0.92 (0.03) p<0.001 Control group: w0: 0.79 (0.7) w6 =0.81 (0.05) p=0.56 MASRI: SM group: w0: 85.4 (6.7) w6: 84.2 (7.7) p=0.044 Control group: w0: 87.8 (4.0) w6 = 90.4 (2.4) p=0.76 Stress PSQ did not improve significantly (p=0.35) Self-efficacy CASE SM group: w0: 34.3 (3.4) w6:38.5 (3.4) P value= 0.04 Control group: w0: 37.0 (2.9) w6 = 36.6 (2.9) p=0.47 HRQoL SMILEY did not improve significantly (p=0.06) SOA (Self of agency) SM group: w0: 17.0 (1.8) w6: 20.8(1.3) P value = 0.03 Control group: w0: 16.2 (1.5) w6 = 17.3 (1.2) P value =0.2 SOC (Self of community) SM group: w0: 138.3 (13.4) w6: 168.3 (10.2) P value= 0.03 Control group: w0: 143.1 (14.0) w6 = 152.2 (11.3) P value =0.4	Medication adherence (to HCQ): Yes/No Stress: No Self-efficacy: Yes HRQoL: No SOA (Self of agency): Yes SOC (Self of community): Yes	11; W	Scalzi, 2018 [47]
P: Receive education and support by a peer-to-peer mentoring C: N/A: intraindividual assessment	N/A; intraindividual assessment	Intervention: 23 Control: -	Quality of life Improved but not statistically significant Depression T1:8.28 (0.94) T2: 5.66 (0.96) p=0.057 Anxiety T1: 7.72 (0.99) T2: 4.2 (1.02) p=0.018 Stress T1: 8.2 (0.58) T2: 8.28 (0.6) p=0.92 Disease activity T1:32.36 (5.36) T2:7.66(5.5) p=0.004	Quality of life: No Depression: Yes Anxiety: Yes Stress: No Disease activity: Yes	10; I	Williams, 2018 [48]

Intervention/management strategy	Comparator	N	Results	Efficacy	SD&OA*	Reference
P: To be enrolled in the Peer Approaches to Lupus Self-management (PALS) program C: N/A: intraindividual assessment	N/A; intraindividual assessment	Intervention: 20 Control: -	Depression changes of 2.62 or 11% change p=0.05 Anxiety score change of 3.52 or 15% change p=0.018 Disease activity SLAQ= change score of 24.70 or 25% change p<0.001	Depression: Yes Anxiety: Yes Disease activity: Yes	10; I	Williams, 2019 [49]
P: Use of SimpleMed+ pillbox to organise and administer medication + receiving digital reminders during 2° month C: Usual care	Other SLE patients	Intervention: 8 Control: 11	Medication adherence Treatment group: 63 to 66 p>0.05 Control group: decline	Medication adherence: No	11; W	Harry, 2020 [50]
P: Web-based education programme (3 months) followed by telephone counselling by physicians (3 months) C: Usual care	Other SLE patients	Intervention: 40 Control: 40	Fatigue Intervention Pre: 4.5 (1.2) post: 3.9 (1.3) p<0.001 Control Pre: 4.7 (1.2) post: 5.0 (1.4) p=0.001 P intergroup: 0.001 Self-efficacy Intervention Pre: 4.6 (2.0) post: 5.2 (1.9) p=0.002 Control Pre: 4.5 (2.1) post: 4.3 (2.2) p=0.007 P intergroup: 0.04	Fatigue: Yes Self-efficacy: Yes	11; W	Kankaya, 2020 [51]

Intervention/management strategy	Comparator	N	Results	Efficacy	SD&OA*	Reference
P: App for self-tracking lifestyle activities and symptoms, and weekly telehealth coaching sessions C: Usual care	Other SLE patients	Intervention: 25 Control: 22	Adherence Adherence App: 91.1 (50–9-97.3) Adherence coaching: 81.3 (25.0–81.3) Fatigue FACIT-F change from baseline Intervention: 4.0 (-3.5, 21.0) p=0.04 Control: -0.5 (-5.0, 7.3) p=0.75 P intergroup: 0.17 HRQoL No significant differences between treatment groups in LupusQoL domains in the ITT population. Pain BPI Pain severity change from baseline Intervention: 0.0 (-2.8, 2.3) p=0.76 Control: 0.6 (-1.3, 1.0) p=0.68 P intergroup: 0.73	Adherence: N/A Fatigue: Yes HRQoL: No Pain: No	11; W	Khan, 2020 [52]
P: PainTRAINER: 8 weeks, automated, internet-based version of pain coping skills training programme C: Usual care	Other SLE patients	Intervention: 30 Control: 30	HRQoL Intervention: improvement in sleep disturbance, anxiety/depression, and fatigue, and LupusPRO HRQoL. Control: improvement in fatigue and in LupusPRO HRQoL no changes in other domains. Pain Change in pain catastrophizing Intervention: −0.9 (8.9) Control: 2.3 (9.6)	HRQoL: Yes/No Pain: Yes/No	11; W	Allen, 2021 [53]
P: Follow the Chronic Disease Self-Management Program (CDSMP) C: Usual care	Other SLE patients	Intervention: 24 Control: -	Health literacy No significant differences in pre-post changes between-group comparisons (p=0.82) Self-efficacy Self-efficacy: significant increase in mean score for the intervention group p=0.02, but not for the control group p=0.23 Patient activation Treatment group (p=0.47) and control group (p=0.55). Disease activity Not statistically significant change (p=0.37)	Health literacy: No Self-efficacy: Yes/No Patient activation: No Disease activity: No	11; W	White, 2021 [54]

Intervention/management strategy	Comparator	N	Results	Efficacy	SD&OA*	Reference
Psychological interventions						
P: Enrolled in a Brief Supportive–Expressive Group Psychotherapy + "booster sessions" for 3 months C: Usual care	Other SLE patients	Intervention: 64 Control: 64	Psychological distress No clinically important group differences Quality of life No clinically important group differences Disease Activity No clinically important group differences Organ damage No clinically important group differences Health service utilization No clinically important group differences	Psychological distress: No Quality of life: No Disease Activity: No Organ damage: No Health service utilization: No	11; I	Dobkin, 2002 [55]
P: Enrolled in a Brief Supportive–Expressive Group Psychotherapy + "booster sessions" for 3 months C: Usual care	Other SLE patients	Intervention: 58 Control: 66	Illness intrusiveness Significant reductions in illness intrusiveness for 2 of 3 domains: (1) relationships and personal development and (2) intimacy	Illness intrusiveness: Yes	11; W	Edworthy, 2003 [56]
P: Receive biofeedback-assisted cognitive behavioural treatment (BF/CBT) C: Usual care	Other SLE patients	Intervention: 32 Control: 27+33	Pain Pain and psychological dysfunction= BF/CBT had significantly greater reductions compared with SMS group (p=0.044) and UC group p=0.028 Psychological functioning BF/CBT greater reductions compared with SMS group (p<0.001) and UC group p<0.001) 9-month follow up BF/CBT continued to exhibit relative benefit compared with UC in psychological functioning (p=0.023) Physical functioning BF/CBT significantly greater improvement compared with UC(p=0.035), and marginally significant improvement relative to SMS (p=0.097) Disease activity changes in BF/CBT group not significantly different from those found for the SMS group (p=0.220) or the UC group (p=0.372)	Pain: Yes Psychological functioning: Yes Physical functioning: Yes Disease activity: No	11; I	Greco, 2004 [57]

Intervention/management strategy	Comparator	N	Results	Efficacy	SD&OA*	Reference
P: Discussion between educator, patient, and partner, after a regular visit for medical care + telephone follow up C: 45-minute video presentation about lupus, and monthly telephone calls	Other SLE patients	Intervention: 64 Control: 58	HRQoL SF-36 MCS: Intervention: 69 (26). Control: 58 (23) p=0.04. SF-36 PCS: Intervention: 55 (25). Control: 48 (25) p=0.20. Disease activity No significant differences in SLAQ scores. Fatigue Intervention: 5.1 (2.4). Control: 6.3 (2.4) p=0.02. Self-efficacy Intervention: 7.2 (1.9). Control: 6.2 (2.0) p=0.02. Social support Intervention: 4.4 (0.6). Control: 4.1 (0.6) p=0.03.	HRQoL: Yes/No Disease activity: No Fatigue: Yes Self-efficacy: Yes Social support: Yes	11; W	Karlson, 2004 [58]
P: Application of the Cognitive-Behaviour Therapy based on the Chronic Illness Self-Management Course C: Usual care	Other SLE patients	Intervention: 11 Control: 22	Physical health status No significant differences in SF-36 PCS scores. Anxiety and depression Significant reduction in total HADS score (p<0.01), but not in CES-D depression. Dysfunctional cognitions Significant reductions in self-criticism (p<0.002) and helplessness (p<0.01), but not in other domains. Fatigue Significant main effect, favouring the intervention group (p<0.02) Illness representations Significant main effect, favouring the intervention group in identity, treatment control and emotional representations (p<0.05). Stress Significant main effect, favouring the intervention group (p<0.02)	Physical health status: No Anxiety and depression: Yes/No Dysfunctional cognitions: Yes Fatigue: Yes Illness representations: Yes Stress: Yes	10; I	Goodman, 2005 [59]

Intervention/management strategy	Comparator	N	Results	Efficacy	SD&OA*	Reference
P: Group session focused on psychoeducative and psychotherapeutic elements C: Same intervention 6 months later (waiting group)	Other SLE patients	Intervention: 26 Control: 8	Psychological distress Aggression domain: 51.62 (10.20) p<0.001 Quality of life Social functioning domain: 67.65 (27.20) p<0.05 Depression HADS-D 6 months: 5.38 (3.67) p<0.01 Control convictions Follow up (12 months) 40.26 (33.74) p<0.05 Social life Follow up (12 months) 35.15 (5.71) p<0.01	Psychological distress: Yes/No Quality of life: Yes/No Depression: Yes Control convictions: Yes Social life: Yes	10; I	Haupt, 2005 [60]
P: Enrolled in a psychosocial group program organized by Community Rehabilitation Network C: Usual care	Other SLE patients	Intervention: 56 Control: 20	Mental health Improvement GHQ-30 and all items post intervention compared with baseline (p<0.001 for all). No improvement in control group. Self-esteem Increase in RSEW score post intervention (28.1) compared with baseline (4.5) p<0.001. No increase in control group.	Mental health: Yes Self-esteem: Yes	10; R	Ng, 2007 [61]

Intervention/management strategy	Comparator	N	Results	Efficacy	SD&OA*	Reference
P: Attend 10 Cognitive-Behaviour Therapy sessions C: General recommendations about health lifestyle	Other SLE patients	Intervention: 21 Control: 24	Quality of life Physical role: T0–T3= TG: 0.15 CG: 0.30 T0–T9= TG: 0.20 CG: 0.45 T0–T15= TG: 0.40 CG: 0.47 Disease activity No significant changes T3 p=0.085 T9: p=0.268 T15: p=0.688 Stress T3 TG: 7.8 (4) p=0.017 CG: 11.6 (6) T9 TG: 7.5 (6.6) p=0.050 CG: 11.3 (6.1) T15 TG: 6.3 (6.3) p=0.001 CG: 12.1 (5.5) Depression T3 TG: 7.8(6.6) p=0.006 CG: 16.6 (11.2) T9 TG :10.3 (9.4) p=0.161 CG: 17.1 (13.1) T15 TG: 7.6(7.2) p=0.003 CG: 16.5 (10.8) Anxiety T3 TG 44 (31) p=0.008 CG: 69.1 (26.3) T9 TG: 43.4 (33.6) p=0.064 CG: 62.2 (30.4) T15 TG: 42.4 (26.4) p=0.007 CG: 66.5 (27.3)	Quality of life: Yes/No Disease activity: No Stress: Yes Depression: Yes Anxiety: Yes	11; W	Navarrete-Navarrete, 2010 [62]
P: Attend 10 Cognitive-Behaviour Therapy sessions C: General recommendations about health lifestyle	Other SLE patients	Intervention: 18 Control: 16	Quality of life MCS: [F= (1.19).0.627 p<0.035] PCS: [F= (1.19).0.434 p<0.078] Anxiety (predictor of MCS) R2 corrected: 0.689, T: -7.294, p<0.00	Quality of life: Yes/No Anxiety (predictor of MCS): Yes	11; W	Navarrete-Navarrete, 2010 [63]

Intervention/management strategy	Comparator	N	Results	Efficacy	SD&OA*	Reference
P: Follow three separate CBT modules preinstalled on a CD ROM C: Educational sessions usual care	Other SLE patients	Intervention: 27 Control: 10 +16	Pain No significant differences Behaviour No significant differences Self-perception No significant differences Self-efficacy No significant differences Quality of life No significant differences Disease activity No significant differences Social support No significant differences Coping skills Increase at post-hoc secondary analysis ($p<0.05$)	Pain: No Behaviour: No Self-perception: No Self-efficacy: No Quality of life: No Disease activity: No Social support: No Coping skills: Yes	11; W	Brown, 2012 [64]

Intervention/management strategy	Comparator	N	Results	Efficacy	SD&OA*	Reference
P: Cognitive-Behaviour Therapy sessions, supportive therapy, multiple psychological interventions, psychoeducational intervention. C: N/A	N/A	6 RCTs	Anxiety Therapy groups: significant improvement versus control (standard mean difference: = –0.95, 95%CI: (-1.57, -0.34), p<0.001). Depression Therapy groups: significant improvement versus control (standard mean difference: = –1.14, 95%CI: (-1.84, -0.44), p<0.001). Disease activity Therapy groups: significant improvement versus control (standard mean difference: = –0.34, 95%CI: (-0.57, -0.11), p<0.001). Fatigue Therapy groups: no significant difference versus control (mean difference: = –0.17, 95%CI: (-0.49, 0.15), p=0.30). HRQoL Therapy groups: significant improvement versus control in physical function (standard mean difference: = 7.65, 95%CI: (0.16, -15.13), p=0.05), but not in mental health. Stress Therapy groups: significant improvement versus control (standard mean difference: = -0.63, 95%CI: (-1.02, -0.23), p<0.001).	Anxiety: Yes Depression: Yes Disease activity: Yes Fatigue: No HRQoL: Yes/No Stress: Yes	12; R	Zhang, 2012 [65]

Intervention/management strategy	Comparator	N	Results	Efficacy	SD&OA*	Reference
P: Follow a modified BI-CBT 8 step program + Skin care education + appearance enhancement workshop C: Usual care	Other SLE patients	Intervention: 10 Control: 5	Body image Intervention group: SIBID pre: 1.92 (0.29) SIBID 24 weeks: 1.16 (1.05) p=0.048 BASS pre: 2.38 (0.84) BASS 24 weeks: 2.96 (0.76) p=0.008 Control group: No significant changes Depression CES-D Intervention group: Pre: 22.60 (11.67) 24 wk: 16.00 (11.65) p=0.045 Control group: No significant changes Quality of Life Intervention group: pre: 40.00 (30.37) 24 wk: 79.38 (27.18) p=0.001 Control group: No significant changes Disease activity Intervention group: SLEDAI total score: pre 5.60 (4.88) SLEDAI total score 24 wk: 6.25 (3.77) p=1	Body image: Yes/No Depression: Yes/No Quality of Life: Yes/No Disease activity: No	10; I	Jolly, 2014 [66]
P: Cognitive-Behaviour Therapy sessions, psychoeducational intervention, expressive group psychotherapy. C: N/A	N/A	6 RCTs	Depression Std. mean difference: -0.44 (-0.78 – --0.10). p=0.01 Disease activity Std. mean difference: -0.68 (-1.82–0.46). p=0.24 Fatigue Std. mean difference: 0.10 (-0.19–0.39). p=0.51 HRQoL PCS Std. mean difference: 8.85 (3.69–14.0). p<0.001 MCS Std. mean difference: 14.4 (-4.9–33.8). p=0.14 Pain Std. mean difference: 0.35 (-0.23–0.93). p=0.23	Depression: Yes Disease activity: No Fatigue: No HRQoL: Yes/No Pain: No	12; R	Liang, 2014 [67]

Intervention/management strategy	Comparator	N	Results	Efficacy	SD&OA*	Reference
P: Follow the "Better Choice, Better Health" Chronic Disease Self-Management Program (CDSMP) C: Usual care	Other SLE patients	Intervention: 15 Control: 15	Pain d=0.96 Psychological distress PI d=1.13 4 months: d=0.78 Depression PI: d=1.63 4 months: d=1.68 Social/role activities limitation Difference between baseline and PI LSES: −0.36 STAI: −0.24 BDI-II: 0.40 p<0.05 CSM: −0.38 HSD: 0.50 p<0.05	Pain: Yes Psychological distress: Yes Depression: Yes Social/role activities limitation: Yes	11; W	Williams, 2014 [68]
P: Participate in a mindfulness group protocol C: N/A: intraindividual assessment	N/A; intraindividual assessment	Intervention: 6 Control: -	Qualitative improvement	Coping skills: N/A	4; W	Horesh, 2017 [69]
P: Attend a mindfulness-based cognitive therapy C: General recommendations about health lifestyle	Other SLE patients	Intervention: 23 Control: 23	Depression MBCT pre: 13.6 (4.1) MBCT post: 8.9 (2.3) CG pre: 12.7 (2.5) CG post: 14.4 (2.8) Quality of life MCS= MBCT pre: 43.7 (11.0) MBCT post: 51.6 (10.4) CG pre:44.3 (10.8) CG post: 43.7 (11.5) p<0.050 PCS= MBCT pre: 44.0 (11.5) MBCT post: 49.7 (10.6) CG pre: 43.2 (10.4) CG post: 44.3 (11.7) p>0.050 Anxiety MBCT pre: 13.8 (4.2) MBCT post: 9.2 (3.5) CG pre: 13.4 (3.2) CG post: 14.5 (3.5) Social function MBCT pre: 15.6 (3.5) MBCT post: 8.8 (2.7) CG pre: 13.4 (3.7) CG post: 14.7 (4.1)	Depression: Yes Quality of life: Yes/No Anxiety: Yes Social function: Yes	11; I	Solati, 2017 [70]

Intervention/management strategy	Comparator	N	Results	Efficacy	SD&OA*	Reference
P: Brief group psychoanalytic psychotherapy: 90 min session once a week for 20 weeks. C: Usual care	Other SLE patients	Intervention: 43 Control: 37	Anxiety/Depression Anxiety Psychotherapy: baseline: 9.0 (0.0–20.0) post: 6.0 (1.0–16.0). p<0.0001 Control: baseline: 6.0 (1.0–16.0) post: 8.0 (1.0–18.0). p=0.132 P intergroup: 0.019 Depression Psychotherapy: baseline: 8.0 (0.0–14.0) post: 4.0 (0.0–14.0). p<0.0001 Control: baseline: 5.0 (1.0–16.0) post: 7.0 (1.0–17.0). p=0.081 P intergroup: 0.022 Coping skills Intervention: significant improvements in confrontive, escape and avoidance, planful problem solving and positive reappraisal, that were higher than those in control for planful problem solving. Disease activity No significant intergroup and intragroup differences in SLEDAI scores. SLE-SSc Significant reductions in intervention group, that were higher than in the control group. HRQoL Significant reductions in intervention group, that were higher than in the control group for Occupational activity, Symptoms, Treatment, Humor and Self-image.	Anxiety/Depression: Yes Coping skills: Yes Disease activity: Yes/No HRQoL: Yes	11; I	Conceição, 2019 [71]
P: Attend 10 Cognitive-Behaviour Therapy sessions C: N/A	N/A	2 studies: 2 RCTs	HRQoL CBT groups: significant improvement in HRQoL (mean difference: = –17.7, 95%CI: (-26.7, -8.63), p<0.001). *Not clear what was the outcome measure.	HRQoL: Yes	12; R	da Hora, 2019 [26]

Intervention/management strategy	Comparator	N	Results	Efficacy	SD&OA*	Reference
P: Attend a mindfulness-based cognitive therapy + homework C: N/A: intraindividual assessment	N/A; intraindividual assessment	Intervention: 25 Control: -	Depression Pre: 24.6 ± 11.2 Post: 17.4 ± 13.0 (p<0.01) Anxiety Pre: 18.2 ± 9.5 Post: 13.4 ± 7.7 (p=0.04) Satisfaction with life Pre: 13.9 ± 6.4 Post: 15.4 ± 8.3 (p=0.48) Stress Pre: 20.4 ± 3.2 Post: 17.9 ± 4.6 (p=0.04) Disease activity No improvement	Depression: Yes Anxiety: Yes Satisfaction with life: No Stress: Yes Disease activity: No	10; I	Kim, 2019 [72]
P: Eight Sessions of Acceptance and Commitment Therapy (ACT) C: Usual care	Other SLE patients	Intervention: 12 Control: 12	Disappointment Intervention Pre: 7.72 (56.50) Post: 5.28 (36.50) CG Pre: 4.33 (53.75) Post 5.33 (57.83) Psychological distress Intervention Pre: 3.27 (26.75) Post: 5.33 (9.42) CG Pre: 2.44 (29.17) Post: 4.33 (29) Psychasthenia Intervention Pre: 11.27 (49.17) Post: 8.32 (19.43) CG Pre: 11.14 (45.25) Post: 11.14 (44.25)	Disappointment: Yes Psychological distress: Yes Psychasthenia: Yes	10; I	Sahebari, 2019 [73]
P: Receive psychoeducational interventions C: Health education, and nontargeted psychological comfort	Other SLE patients	Intervention: 42 Control: 43	Quality of Life Increase of all four domains of the WHOQOL-BREF at 3 months (p<0:05) Depression Reduced, p<0.05 Anxiety Reduced, p<0.05	Quality of Life: Yes Depression: Yes Anxiety: Yes	11; W	Xu, 2021 [74]
Dietary therapy and nutrition						

Intervention/management strategy	Comparator	N	Results	Efficacy	SD&OA*	Reference
P: NCEP Step 2 diet: 30% or less calories from fat (7% from saturated fat, 13% from monounsaturated fat, and 10% from polyunsaturated fat), and < 200 mg of cholesterol per day + maintain their usual level of physical activity. C: Usual care	Other SLE patients	Intervention: 8 Control: 8	Body composition (body weight) Diet group: w0: 79.4 (8.4) w12: 75.7 (7.4) Control group: 86.2 (24.5(w12: 81.5 (20.3) P intragroup: 0.006 P intergroup: 0.50 HRQoL (VAS) Diet group: w0: 59.4 (7.8) w12: 68.4 (7.8) Control group: 56.3 (15.1) w12: 53.8 (18.2) P intragroup: 0.01 P intergroup: 0.05 Lipid profile Total cholesterol Diet group: w0: 222.4 (24.3) w12: 210.1 (25.4) Control group: 199.3 (49.4) w12: 194.3 (24.1) P intragroup: 0.01 P intergroup: 0.40 LDLc Diet group: w0: 136.4 (23.7) w12: 134 (20.6) Control group: 125.3 (36.9) w12: 119.1 (26.8) P intragroup: 0.80 P intergroup: 0.60 HDLc Diet group: w0: 55.6 (17.4) w12: 53.3 (15.9) Control group: 44.0 (10.8) w12: 49.4 (11.6) P intragroup: 0.09 P intergroup: 0.04 TG Diet group: w0: 151.6 (85.2) w12: 114.6 (30.2) Control group: 150.8 (62.2) w12: 128.0 (43.8) P intragroup: 0.80 P intergroup: 0.20 Nutrient intake Diet group: greater reductions in nutrient intake compared to control group in percentage calories from total fat, SFA, MUFA, and PUFA, and dietary cholesterol	Body composition (body weight): Yes HRQoL (VAS): Yes Lipid profile: No Nutrient intake: Yes	11; W	Shah, 2002 [75]

Intervention/management strategy	Comparator	N	Results	Efficacy	SD&OA*	Reference
P: No intervention. Dietary nutrients estimated by a semiquantitative food frequency questionnaire C: No	Other SLE patients	Intervention: 7 Control: 189	Disease activity High intake of Vitamin C associated with less active disease (RR: 0.26 95%CI: (0.1–0.67), p=0.005). No significant associations for other nutrients. Cardiovascular risk Higher intake of vegetable fat was found among patients who developed a vascular event versus those who did not (35.9 versus 30.4 g/day p=0.04). No significant differences for other nutrients.	Disease activity: Yes/No Cardiovascular risk: Yes/No	5; R	Minami, 2003 [76]
P: 1° group: 3g MaxEPA+ 3mg copper 2° group: 3g MaxEPA + placebo copper 3° group: 3 mg copper+ placebo oil fish C: Placebo	Other SLE patients	Intervention: 40 Control: 12	Body composition No significant changes from baseline in BMI in any of the groups. Disease activity SLAM-R Fish oil: w0: 6.12 w24: 4.69 p<0.05 No fish oil: no significant change from baseline. Copper: no significant change from baseline. Patient-reported improvement Fish oil and copper: Improvement: 6/13 No changes: 7/13. Placebo: Improvement 1/13 No changes: 9/13 Worsening: 3/13. p=0.027	Body composition: No Disease activity: Yes	11; W	Duffy, 2004 [77]

Intervention/management strategy	Comparator	N	Results	Efficacy	SD&OA*	Reference
P: Counselled to follow the NCEP Step II diet: < 30% of energy as fat and < 7% as saturated fat, and < 200 mg of cholesterol per day 21. Counselled to limit their intake of sodium (< 2400 mg/day) and refined and added sugars and consume 2–3 servings of skim/low fat dairy foods and ≥ 5 servings of fruits and vegetables per day. C: Usual care	Other SLE patients	Intervention: 8 Control: 7	Nutrient intake Energy intake Diet group: w0: 1693 (320) w12: 1145 (310) Control group: 1386 (509) w12: 1339 (465) P intragroup: 0.02 P intergroup: 0.10 Vitamin B12 Diet group: w0: 2.8 (0.8) w12: 1.6 (1.1) Control group: 2.3 (0.9) w12: 2.6 (0.7) P intragroup: 0.02 P intergroup: 0.05 Sodium Diet group: w0: 2.7 (1.2) w12: 1.7 (0.7) Control group: 1.9 (0.6) w12: 1.9 (0.8) P intragroup: <0.05 P intergroup: 0.08 Haemoglobin levels Diet group: w0: 12.4 (1.1) w12: 12.0 (1.1) Control group: 11.3 (1.8) w12: 10.9 (1.7) P intragroup: >0.05 P intergroup: 0.08	Nutrient intake: Yes/No Haemoglobin levels: No	11; W	Shah, 2004 [78]
P: Assessing daily use of micronutrient supplements (MS) in SLE patients: Calcium, Vitamin D, Multivitamins (vitamin B6, folic acid, minerals iron, B12, C, E, magnesium, potassium). C: No	Other SLE patients	Intervention: 137 Control: 122	Healthcare utilisation Compared with non-users, MS users frequently visited health-care professionals and used diagnostics tests. Disease activity No difference in SLEDAI-2K or SLAM between users and non-users. Lower SLAM in MS users (4.0 (0.4)) versus non-users (5.0 (0.3)) after excluding those taking calcium /vitamin D. HRQoL No differences between users and non-users in SF-36 PCS and MCS scores. Organ damage Higher SDI in MS users (1.6 (0.2)) versus non-users (1.2 (0.1)).p=0.02	Healthcare utilisation: No Disease activity: Yes/No HRQoL: No Organ damage: No	1; I	Aghdassi, 2010 [79]

Intervention/management strategy	Comparator	N	Results	Efficacy	SD&OA*	Reference
P: No intervention. Dietary nutrients estimated by a semiquantitative food frequency questionnaire (Vitamin B6, Vitamin B12, folate, total dietary fibre, soluble dietary fibre, insoluble dietary fibre). C: No	Other SLE patients	Intervention: 216 Control: -	Disease activity High intake of Vitamin B6 (HR: 0.41 95%CI: 0.18–0.97 p=0.04), and total dietary fibre (HR: 0.29, 95%CI: (0.11, 0.78), p=0.01) associated with less active disease No significant associations for Vitamin B12 or folate Cardiovascular risk No significant associations between nutrient intake and vascular events.	Disease activity: Yes Cardiovascular risk: No	5; R	Minami, 2011 [80]
P: Reduced calorie diet (1200/1500 kcal/d) [combined with increasing exercise from 100 to 300 min/w] C: N/A: intraindividual assessment	N/A; intraindividual assessment	Intervention: 15 Control: -	Body composition BMI change: -3.04 (0.7) Body weight change (kg): -8.3 (2.0) Waist circumference change (cm): -10.8 (4.9) Physical activity Self-reported physical activity (minutes/session) +25.6.	Body composition: Yes Physical activity: Yes	10; W	Otto, 2011 [6]

Intervention/management strategy	Comparator	N	Results	Efficacy	SD&OA*	Reference
P: Low GI diet whereby carbohydrate intake was limited to 45 g per day of low GI food, without restricting the consumption of fat and protein C: Low calorie diet	Other SLE patients	Intervention: 11 Control: 12	Body composition Weight loss from baseline (kg) Low GI diet 3.9 (0.9) Low Cal diet 2.4 (2.2) p<0.01 P intragroup: <0.001 P intergroup: > 0.05 Disease activity SLEDAI Low GI diet: w0: 3.2 (5.1) w6: 2.8 (6.1) Low Cal diet: w0: 1.0 (1.2) w6: 1.0 (1.2) P intragroup: =0.03 P intergroup: >0.05 ECLAM Low GI diet: w0: 1.7 (1.2) w6: 1.3 (1.4) Low Cal diet: w0: 1.8 (1.2) w6: 2.2 (1.1) P intragroup: =0.03 P intergroup: >0.05 Fatigue FSS Low GI diet: w0: 4.9 (0.9) w6: 4.4(1.2) Low Cal diet: w0: 4.7(1.5) w6: 4.4(1.7) P intragroup: =0.03 P intergroup: >0.05 Seep quality PSQI Low GI diet: w0: 9.3(5.2) w6: 6.7(4.3) Low Cal diet w0: 7.1(4.2) w6: 7.6 (4.7) P intragroup: >0.05 P intergroup: >0.05	Body composition: Yes Disease activity: No Fatigue: Yes/No Seep quality: No	11; W	Davies, 2012 [81]
P: No intervention. Administration of food frequency questionnaire (FFQ) + study of fatty acid content and plaque occurrence C: No	Other SLE patients	Intervention: 114 Control: 122	Cardiovascular risk Omega-3 (r = -0.20, p=0.049), EPA (r = -0.32, p=0.002) and DHA (r = -0.33, p=0.001) in adipose tissue correlated negatively with plaque presence, whereas Omega-6 (r = 0.22, p=0.027) and linoleic acid (r = 0.24, p=0.019) correlated positively. Disease activity EPA (r= -0.36, p<0.001) and DHA (r= -0.33, p<0.001) in adipose tissue correlated negatively with SLEDAI Organ damage Arachidonic acid in adipose tissue correlated positively with SDI (r= -0.20, p<0.005).	Cardiovascular risk: Yes Disease activity: Yes Organ damage: Yes/No	1; I	Elkan, 2012 [82]

Intervention/management strategy	Comparator	N	Results	Efficacy	SD&OA*	Reference
P: With each meal, each patient received 1 capsule for 3 months, containing 500 mg turmeric (22.1 mg was the active ingredient curcumin) C: Placebo	Other SLE patients	Intervention: 12 Control:12	Renal function Proteinuria (mg/day) Turmeric: m0: 954.2 (836.6) m3: 260.9 (106.2). Placebo: m0: 527.7 (388.3) m3: 471.4 (292.3). P intragroup: 0.009 P intergroup>0.05 Systolic blood pressure (mmHg) Turmeric: m0: 13.3 (2.3) m3: 12.4 (1.8). Placebo: m0: 12.5 (2.4) m3: 12.3 (1.5). P intragroup: 0.02 P intergroup>0.05 Haematuria Significant decrease from baseline in RBC in the turmeric (p=0.02) but not in the placebo group. No significant differences in diastolic blood pressure, GFR, serum albumin. Inflammatory markers Turmeric: C4: m0: 17.0 (8.5) m3: 22.9 (9.0) p=0.02. No significant changes from baseline in C3 and anti-dsDNA levels. No significant differences between groups changes from baseline in C4, C4 and anti-dsDNA levels in the turmeric group.	Renal function: Yes/No Inflammatory markers: No	11; I	Khajehdehi, 2012 [83]

Intervention/management strategy	Comparator	N	Results	Efficacy	SD&OA*	Reference
P: CVD-PCP counselling program= Phase 1: assessment of CVD risk factor on patients Phase 2: education on cardiovascular diseases and discussion on prevention strategies. Followed by a patient-centred nutrition counselling to attend at least once a month C: Usual care	Other SLE patients	Intervention: 41 Control: 30	Body composition Weight (kg): m0: 86.0 (20.2) m6: 84.3 (19.0) p=0.025. BMI: m0: 31.3 (7.4) m6: 30.9 (7.2) p=0.07. Waist circumference (cm): m0: 101.3 (15.1) m6: 102.3 (14.2) p=0.37. Nutrient intake Total calories: -164.7 kcal at month 6 (p=0.071) %. Calories from fat: -4.13% at month 6 (p=0.011) Sodium: -508.3 mg at month 6 (p=0.006) No differences in cholesterol, omega-3/6, fibre, sugar and folate levels. Changes in diet habits: richer in fruits and vegetables (O<0.001), richer in fibre (O=0.011), low-cholesterol diet (p=0.034).	Body composition: Yes/No Nutrient intake: Yes/No	10; I	Everett, 2015 [84]
P: 1000 mg of green tea extract C: Placebo	Other SLE patients	Intervention: 32 Control: 36	Disease activity (SLEDAI) Green tea extract: m0: 4.7 (3.3) m3: 2.8 (3.2) Placebo: m0: 3.2 (3.2) m3: 2.9 (3.2) P intragroup: 0.001 P intergroup: 0.004. HRQoL (SF-36) Green tea extract: significant improvement from baseline in PF, RP, GH and VT. Higher improvements than placebo in PF, GH and VT.	Disease activity (SLEDAI): Yes HRQoL (SF-36): Yes	11; I	Shamekhi, 2017 [85]
P: Health coaching (weekly calls to educate and implement changes based on data analysis) C: Usual care	Other SLE patients	Intervention: 20 Control: 20	Pain, Fatigue, HRQoL 78% improved in the experimental group and 36% in the control group (p<0.01)	Pain, Fatigue, HRQoL: Yes	11; W	Rothman, 2018 [86]

Intervention/management strategy	Comparator	N	Results	Efficacy	SD&OA*	Reference
P: No intervention. Good adherence (>10 points) to Med Diet (14-item questionnaire on food consumption frequency and habits) C: No	Other SLE patients	Intervention: 143 Control: 16	Body composition Patients with high adherence had lower frequency of obesity than patients with low adherence (20.7% versus 37.5% p=0.026), a lower mean BMI (25.9 [5.4] versus 31.5 [7.9], p=0.001) and lower fat mass BMI (32.8 [9.0] versus 38.5 [7.9], p=0.002) Cardiovascular risk Inverse relationship between Med Diet score and hsCRP: delta= -0.055, 95%CI: (-0.108, -0.003), p=0.039 No significant relationship with homocysteine levels. Patients with high adherence had lower concentrations of TG than patients with low adherence, but there were no differences in total/HDL/LDL cholesterol. Disease activity Inverse relationship between Med Diet score and SLEDAI: beta= -0.380, 95%CI: (-0.464, -0.296), p<0.001 Organ damage Inverse relationship between Med Diet score and SDI: beta= -0.740, 95%CI: (-0.938, -0.542), p<0.001	Body composition: Yes Cardiovascular risk: Yes/No Disease activity: Yes Organ damage: Yes	1; R	Pocovi-Gerardino, 2021 [87]
Complementary and alternative medicine						
P: Administration of Traditional Chinese Medicine (cicimifuga rhizome 9g + oldenlandia herb 18 h, southernwood 15 g, red peony root 12 g + moutan bark 12 g+ rehmannia root 15 g+ turtle shell 12g etc) C: Usual care (Western medicine)	Other SLE patients	Intervention: 85 Control: 85	Lipid profile Total cholesterol IM group: m0: 2.1(0.1) m24: 2.2 (0.1) WM group: m0: 2.0 (0.1) m24: 3.0 (0.2) P intragroup: >0.05 P intergroup: <0.01 TG IM group: m0: 4.0 (0.1) m24: 4.2 (0.1) WM group: m0: 4.0 (0.1) m24: 5.7 (0.2) P intragroup: >0.05 P intergroup: <0.01 Lipoproteins IM group: no significant changes from baseline in HDL/LDL/VLDL c and APoA. Lower levels of LDL and VLDLc and higher levels of HDLc compared with WM.	Lipid profile: Yes/No	11; W	Wen, 2007 [88]

Intervention/management strategy	Comparator	N	Results	Efficacy	SD&OA*	Reference
P: Acupuncture (modified Feng 1985 protocol) C: Minimal needling, usual care	Other SLE patients	Intervention: 103 Control: 89	Fatigue No significant differences across groups in post-pre scores in fatigue Pain No significant differences across groups in post-pre scores in pain Disease activity SLEDAI mean change AC: 1.9(7.2) MN:1.6(4.1) UC: 0.75(8.3) P value AC vs MN: 0.05 AC vs UC: 0.12 SLAM-R mean change AC: 0.63(4.6) MN: −0.57(3.9) UC: −0.63(6.7) P value AC vs MN: 0.22 AC vs UC: 0.28 PGA mean change AC: 0.0(14.8) MN: −1.4(5.6) UC: 0.38(11.1) P value AC vs MN: 0.03 AC vs UC: 0.13 Inflammatory markers No significant differences across groups in post-pre-IL-1B and IL-6 levels.	Fatigue: No Pain: No Disease activity: No Inflammatory markers: No	11; I	Greco, 2008 [89]
P: Being CAT (complementary and alternative therapies) users C: No	Other SLE patients	Intervention: Control:	Quality of life CAT users: significantly reduced PF, BP and SF compared with CAT non-users. Organ damage CAT users: 1.20 (0.97) CAT non-users: 0.57 (0.98) P value: 0.01	Quality of life: No Organ damage: No	1; R	Alvarez-Nemegyei, 2009 [90]

Intervention/management strategy	Comparator	N	Results	Efficacy	SD&OA*	Reference
P: Traditional Chinese Medicine: Dan-Chi-Liu-Wei combination (granules) C: Usual care + 10% Traditional Chinese medicine	Other SLE patients	Intervention: Control:	Disease flares TCM: 2/23 (8.6%), 0 severe C: 3/23 (13%) 1 severe. P intergroup>0.05 Disease activity SLEDAI: TCM: m0: 4.3 (2.3) m6: 3.5 (1.1) p=0.083 Control: m0: 3.7 (2.2) m6: 3.3 (3) p=0.867 Inflammatory markers C3 and anti-dsDNA: no change after 6 months in TCM or control group. C4: TCM: m0: 14.7 (5.6) m6: 26 (8.6) p<0.01 Control: m0: 15.7 (8.3) m6: 24.7 (10.7) p<0.01	Disease flares: No Disease activity: No Inflammatory markers: Yes/No	11; I	Liao, 2011 [91]
P: Zi Shen Qing (combination of 6 herbs) C: Hydroxychloroquine 100 mg/12h PO	Other SLE patients	Intervention: 42 Control: 42	Disease activity SLEDAI Active group: w0: 10.5 (2.2) w12: 5.1 (1.5) Control: w0: 10 (2.1) w12: 7.0 (1.9) P intragroup<0.01 P intergroup: 0.03 Mean prednisone dose Active group: w0: 10.2 (3.6) w12: 3.6 (3.1) Control: w0: 11.1 (6.6) w12: 6.6 (5.6) P intragroup<0.01 P intergroup: 0.01 Inflammatory markers Active group: reduction in anti-dsDNA and IgG levels increase in C3, C4, NK cell activity from baseline. Reductions in anti-ds DNA and increases in C3/C4 were greater than in the control group.	Disease activity: Yes Inflammatory markers: Yes	11; I	Linda, 2013 [92]
Photoprotection						

Intervention/management strategy	Comparator	N	Results	Efficacy	SD&OA*	Reference
P: 3 different sunscreens: Sunscreen A: UVB: Octocrylene. UVA: Mexoryl SX, Mexoryl XL, Parsol 1789. TiO2), SPF >60 Sunscreen B: (UVB: Eusolex 6300, Parsol MCX, Uvinul T150, Neohelipan. UVA: Parsol 1789. TiO2), SPF >75 Sunscreen C: (Eusolex 6300, Parsol MCX, Uvinul T150 UVA: Parsol 1789. TiO2) SPF= 35] C: N/A: intraindividual assessment	N/A; intraindividual assessment	Intervention: 11 Control: -	Photoprotection Complete Photoprotection Sunscreen A in 11 out of 11 patients Sunscreen B in 5 out of 11 patients Sunscreen C in 3 out of 11 patients Expression of keratinocyte ICAM-1 mRNA Increased in unprotected irradiated skin area not increased in area treated by sunscreen A	Photoprotection : Yes	10; R	Stege, 2000 [93]
P: 2 mg/cm2 sunscreen Anthelios W30 La Roche- Posay (parsol 1789, uvinul N539, uvinul T150, mexoryl XL, titanium dioxide) C: N/A: intraindividual assessment	N/A; intraindividual assessment	Intervention: 66 Control: -	Photoprotection Patients with photosensitivity who were treated with sunscreen developed: LE lesion: 2 (4) No reaction: 26 (47) Pigmentation only: 25 (49)	Photoprotection : Yes	5; W	Herzinger, 2004 [94]
P: 9-week course of low-dose UVA1 phototherapy C: N/A: intraindividual assessment	N/A; intraindividual assessment	Intervention: 9 Control: -	Disease activity SLEDAI Pre: 7.2 (5.6) post: 0.9 (1.8) p=0.005 Manifestations Reduction in skin rash no significant changes in other manifestations. Inflammatory markers Reduction in Th2, Th1/Th2 ratio, Tc1, IFN-gamma producing CD8+cells. Increase in IL4+/D4+ cells.	Disease activity: Yes Inflammatory markers: Yes	10; I	Szegedi, 2005 [95]

Intervention/management strategy	Comparator	N	Results	Efficacy	SD&OA*	Reference
P: Broad-spectrum liposomal sunscreen 20 min prior to a combined standardized UVA/UVB irradiation C: Unprotected skin, sunscreen use	Healthy controls, intraindividual assessment	Intervention: 20 Control: 10	Inflammatory markers MxA: sunscreen reduced MxA positive cells compared with unprotected skin. Immune cells: sunscreen reduced the number of CD11c (DC), CD23 (pDC) and CD68 (macrophages) cells compared with unprotected skin.	Inflammatory markers: Yes	10; I	Zahn, 2014 [96]
P: Photoprotection awareness C: No	Other SLE patients	Intervention: 205 Control: 17	Disease activity SLEDAI Aware: 2.0 (4) unaware: 2.0 (3) p=0.41 Organ damage SDI Aware: 1.0 (2) unaware: 1.0 (2) p=0.81 Inflammatory markers No differences in ANA, Ro/La and anti-DSDNA positivity, and in C3/C4 levels.	Disease activity: No Organ damage : No Inflammatory markers: No	1; I	Abdul Kadir, 2018 [97]
Healthcare models						
P: Analysis (coding) of active patient-physician communication from audiotaped routine visits C: N/A: intraindividual assessment	N/A; intraindividual assessment	Intervention: 79 Control: -	Disease activity No associations between SLAM or SLEDAI score and patient participation score (p>0.20 for all) Functional disability No associations between HAQ score and patient participation score (p=0.20) Organ damage Patient participation was associated with lower SDI scores (OR: 0.93, 95%CI: (0.91–0.94), p<0.001), but not with reductions in SDI progression (p=0.13)	Disease activity: No Functional disability: No Organ damage: Yes	10; I	Ward, 2003 [98]
P: Application of the continuous care model (CCM) [Orientation, sensitization, control] C: N/A: intraindividual assessment	N/A; intraindividual assessment	Intervention: 34 Control: -	Knowledge (about SLE-related healthcare issues) Baseline: 3.0 (5.3) 3 months: 26.9 (14.2) [improved] Quality of life SF-36 Improvements in PF, RP, GH, VT, RE, and MH (p<.001)	Knowledge (about SLE-related healthcare issues): Yes Quality of life: Yes	10; I	Sahebalzamani, 2017 [99]

Intervention/management strategy	Comparator	N	Results	Efficacy	SD&OA*	Reference
P: Transitional care plan (structural assessments and corresponding interventions based on the Omaha System) + telephone follow up 2, 3, 6, and 10 weeks after discharge C: Usual care	Other SLE patients	Intervention: 64 Control: 61	Quality of life SF-36 MCS TC pre-test: 45.4 (14.3) post-test: 61.1 (9.1) Control pre-test: 49.8 (13.1) post-test: 57.4 (9.3) p=0.001 SF-36 PCS TC pre-test: 48.8 (12.4) post-test: 63.7 (10.9) Control pre-test: 50.0 (11.9) post-test: 60.5 (12.3) p=0.046 Self-care TC pre-test: 92.9 (10.8) post-test: 112.9 (6.8) Control pre-test: 95.7 (9.6) post-test: 100.9 (8.5) p<0.001 Readmission rate 30 day TC: 3 (4.7) Control: 13 (21.3) P: 0.005	Quality of life: Yes Self-care: Yes Readmission rate 30 day: Yes	11; I	Xie, 2018 [100]
P: Multidisciplinary care (from a physician, pharmacist, and nurse) in addition to routine clinical follow up C: Usual care	Other SLE patients	Intervention: 42 Control: 40	Disease activity SLEDAI-2K Intervention: 0 control group: 2 p=0.027 Patient satisfaction Intervention: 92.9% Control group: 0% p=0.000 Quality of life Improvements (0.94 vs. 0.85) p=0.006 Medication adherence Control group: baseline:55 (51.8, 64) end 59 (53, 63.3) Intervention: baseline56.5 (52.3,63.8) end: 55 (51, 65) Belief about medicines Control group: baseline: 2.5(0,6.3) end: 3(1.8, 5) Intervention: baseline: 2 (0,6.8) end: 3 (0,7) Organ damage Control group: baseline:1 (0, 1.3) end: 0.5 Intervention group: (0, 2.3) end 0 (0, 1)	Disease activity: Yes Patient satisfaction: Yes Quality of life: Yes Medication adherence: Yes Belief about medicines: Yes Organ damage: Yes	11; W	Zhang, 2019 [101]
Laser treatment						

Intervention/management strategy	Comparator	N	Results	Efficacy	SD&OA*	Reference
P: Treatment with pulsed dye laser (PDL) on discoid lesions C: N/A: intraindividual assessment	N/A; intraindividual assessment	Intervention: 12 Control: -	Pain VAS (0–10): 2.4 (0.5) Disease activity CLASI activity W0: 4.4 (0.2) w6: 1.3 (0.3) p<0.001 Patient satisfaction VAS (0–10): 6.9 (0.5)	Pain: N/A Disease activity: Yes Patient satisfaction: N/A	10; R	Erceg, 2009 [102]
P: Treatment with pulsed dye laser (PDL) on discoid lesions C: N/A: intraindividual assessment	N/A; intraindividual assessment	Intervention: 9 Control: -	Disease activity (cutaneous) Erythema index change PDL: -16.6% Control: -9.8% p<0.05 Texture index change PDL: -14.6% Control: -5.9% p<0.05 mCLASI PDL: -36.7% Control: -33.3% p>0.05 Inflammatory markers Non-significant reduction in CXCL-9, 10, IFN-c, IL-1b, TNF-a, TGF-b, CD3, CD4, CD8 and CXCR3.	Disease activity (cutaneous): Yes Inflammatory markers: No	10; I	Rerknimitr, 2019 [103]
Social support						
P: Attend support group C: No	Other SLE patients	Intervention: 34 Control: 71	HRQoL Adjusted MCS Support group: 31.5 (1.9) No support group: 39.8 (1.3) p<0.05 Adjusted PCS Support group: 38.0 (1.6) No support group: 39.8 (1.1) p>0.05	HRQoL: Yes/No	1; R	Dorsey, 2004 [104]
P: No intervention (exposure to illness uncertainty, social support, coping modes through questionnaires)-being hospitalized for over a week C: N/A: intraindividual assessment	N/A; intraindividual assessment	Intervention: 200 Control: -	Illness uncertainty Mean: 97.60 ± 11.24 Social support Illness uncertainty negatively correlated with support availability (r = -0.161) Coping modes Illness uncertainty positively correlated with the yielding coping mode (r = 0.249)	Illness uncertainty: Yes Social support: Yes Coping modes: Yes	1; R	Li, 2019 [105]
Others						

Intervention/management strategy	Comparator	N	Results	Efficacy	SD&OA*	Reference
P: Meditation instruction + meditation practice C: Usual care	Other SLE patients	Intervention: 15 Control: 15	Sympathetic activity Serum normetanephrine level decreased in meditation and control groups, not statically significant. Heart rate: Meditation: 78.5 (4.7) Control: 82.2 (4.2) p=0.03 Heart rate variability [measured only in intervention group] Improvement in time and frequency domains. Quality of life SF-36 PCS Meditation: m0: 21.4(5.0-50-2) m6 62.2 (51.8-88.4) Control: m0: 19.4 (10.4-49.2) m6: 55.4 (36.4-83.4). p=0.04 SF-36 MCS Meditation: m0: 16.9 (4.4-46.0) m6 72.4 (45.1-81.6) Control: m0: 13.9 (7.7-44.2) m6: 45 (29.8-77.6). p<0.01	Sympathetic activity: Yes/No Quality of life: Yes	10; I	Bantornwan, 2014 [106]
P: Completing a Home Cleaning and Maintenance Product list (HCMPL) questionnaire C: No	Other SLE patients	Intervention: 80 Control: 41	Disease flares Bath oil use (IRR 1.008, 95%CI: (1.00, 1.02)) = significant association with increased SRF day relative risk (IRR). Cleansing beauty (IRR 0.999, 95%CI: (0.998, 0.999)) make-up (IRR 0.998, 95% : (0.997, 0.999)) adhesives (IRR 0.994, 95%CI: (0.991, 0.997)) paint (IRR 0.99, 95%CI: (0.986, 0.995)) = paradoxical "protective" effects (reduced SRF days)	Disease flares: Yes	2; I	Squance, 2015 [107]

Intervention/management strategy	Comparator	N	Results	Efficacy	SD&OA*	Reference
P: No intervention. Self-reported smoking status (smoker: one cigarette per day for three consecutive months) C: No	Other SLE patients	Intervention: 65 Control: 665	Disease activity/manifestations SLEDAI Smokers:12.5(8.9) Non-smokers:10. (7.1) p=0.028 Manifestations Smokers had higher frequency of Microscopic haematuria (30.8% versus19.1%, p=0.025), photosensitivity (35.9% versus 18%, p=0.006), nephropathy (59.4% versus 39.8%, p=0.011) and proteinuria (54.7% versus NS: 35.2%, p=0.010), but not in other SLEDAI descriptors. Inflammatory markers There were no differences between smokers and non-smokers in ANA, anti-dsDNA, anti-Sm, anti-RNP, SSA/SSB and aPL antibody positivity.	Disease activity/manifestations: Yes Inflammatory markers: No	1; R	Xu, 2015 [108]
P: 1° group= warm shower / 2° group= warm footbath with adding of 2 cups of Epsom salt C: Warm shower	Other SLE patients	Intervention: 60 Control: 30	Fatigue Warm shower, mean difference baseline - day 3: 1.90000, p=0.001 baseline - day 5: 2.34333, p=0.002 baseline - day 7: 2.90000, p=0.001 Footbath using warm water only, mean difference baseline - day 3: 0.76667, p=0.305 baseline - day 5: 0.10000, p=0.878 baseline - day 7: 1.43333, p=0.052 Footbath using Epsom salt, mean difference baseline - day 3: 0.66667, p=0.268 baseline - day 5: 1.00000, p=0.116 baseline - day 7: 1.24000, p=0.110	Fatigue: Yes	10; R	Abdelaziz, 2020 [109]

Intervention/management strategy	Comparator	N	Results	Efficacy	SD&OA*	Reference
P: Training of the patient on how to use the cosmetic camouflage. Letting the patient use camouflage based on personal needs. C: Usual care	Other SLE patients	Intervention: 28 Control: 15	Depression b = 1.92, 95%CI: (-3.67, -0.16), p=0.033 No significant changes in the control group Anxiety b =2.87, 95%CI: (-5.67, -0.07), p=0.045 No significant changes in the control group Self-esteem b= 2.79 95%CI: (0.13, 5.46) p=0.041 No significant changes in the control group HRQoL b =7.56, 95%CI: (-47.86, -7.27), p=0.009 No significant changes in the control group Skin damage DLQI b =7.65, 95%CI: (-12.31, -3.00), p=0.002 No significant changes in the control group	Depression: Yes/No Anxiety: Yes/No Self-esteem: Yes/No HRQoL: Yes/No Skin damage: Yes/No	11; W	Oliveira, 2020 [110]
P: Transcutaneous auricular vagus nerve stimulation (taVNS) C: Sham-stimulation	Other SLE patients	Intervention: 12 Control: 6	Disease activity Decrease from baseline to day 5 of both PtGA PGA in taVNS subjects compared to SS (not statistically significant: p=0.125, p=0.053, PtGA, PGA respectively Fatigue Reduction in taVNS compared with SS (11.00 vs 0.00, p=0.003) Pain Reduction in taVNS compared with SS (−5.00 vs 0.10, p=0.049) Swollen joint taVNS: 100.0 (100.0 to 100.0) SS: 9.09 (–8.33 to 57.15) Inflammatory markers No significant changes in serum levels of IFNα, IL-1β, IL-6, IL-8, IL-10, IL1RA, IL-18 or TNF	Disease activity: No Fatigue: Yes Pain: Yes Swollen joint: Yes Inflammatory markers: No	11; I	Aranow, 2021 [111]
SSc						
Physical exercise and physical activity						

Intervention/management strategy	Comparator	N	Results	Efficacy	SD&OA*	Reference
P: Mouth stretching exercise and oral augmentation exercise C: N/A: intraindividual assessment	N/A; intraindividual assessment	Intervention: 10 selected among 35 patients with MMO≤30mm Control: N/A	MMO: +10.7 mm (2.06-SD), p<0.0049. Similar for dentulous and edentulous.	Yes	10; R	Pizzo, 2003 [112]
P: Paraffin bath and hand exercises C: N/A: intraindividual assessment	N/A; intraindividual assessment	Intervention: 17 Control: N/A	Improvement in finger flexion and extension deficit, p<0.01 Thumb abduction, volar flexion wrist, p<0.05 VAS stiffness and VAS skin, p<0.001	Yes	10; I	Sandqvist, 2004 [113]
P: Self-administrated stretching C: No intervention	Healthy controls	Intervention: 45 Control: 21 healthy controls	Total passive range of movement was significantly improved in each finger after 1m of intervention.	Yes	10; I	Mugii, 2006 [114]
P: Individualised rehabilitation program followed by at-home exercise C: Usual care	Other SSc patients	Intervention: 16 Control: 17	Non-significant (ns) change in HAQ-DI. SF-36, Increase in both MCS and PCS (p=0.013 and 0.001 resp.). Significant improvement in HAMIS (both hands) and SGRQ (all domains).	Yes/no	10; R	Antonioli, 2009 [115]
P: Connective tissue massage, Mc Mennell joint manipulation and home exercise C: Home exercise programme alone	Other SSc patients	Intervention: 20 Control: 20	Intervention: Fist closure, HAMIS, Cochin hand functional disability scale, (HAQ, PSI, MSI) of SF-36 p<0.05 Control: only fist closure p<0.0001	Yes	11; I	Bongi, 2009 [116]
P: Tailored rehabilitation program with manual therapy and exercise C: Educational advice and information about SSc	Other SSc patients	Intervention: 10 Control: 10	Intervention group: HAMIS: T0-T1: p<0.005 T0-T2: p<0.01 Mouth opening: T0-T1: p<0.05 T0-T2: p<0.01// MSI and PSI (SF-36), HAQ, DURUOZ scale, Fist closure, FACE-VAS significant in T0-T1, NS in T0-T2 Hand opening NS in both T0-T1- and T0-T2	Yes	11; W	Maddali Bongi, 2009 [117]
P: Aerobic exercise programme C: Aerobic exercise programme	Healthy controls	Intervention: 7 Control: 7	Baseline: SSc: 19.72 (3.51) Control: 22.94 (4.70) w8: SSc: 22.27 (2.53) Control: 24.55 (3.00) p between group= 0.149	Yes	10; I	Oliveira, 2009 [118]
P: Combined connective tissue massage, Kabat´s technique, kinesitherapy and home mimic exercise program C: Home exercise programme alone	Other SSc patients	Intervention: 20 Control: 20	Intervention: Mouth opening, T0: 3.8 (1.06), T1: 4.28 (0.99), T2: 4.58 (1.16) T0-T1: p<0.05, T0-T2 p<0.001. Control: Mouth opening: T0: 4.0 (1.09), T1: 4.48 (1.04), T2: 4.1 (1.05) T0-T1: p<0.001 T0-T2: HAQ & SF-36 ns.	Yes	11; I	Maddali Bongi, 2011 [119]

Intervention/management strategy	Comparator	N	Results	Efficacy	SD&OA*	Reference
P: Supervised, treadmill, treadmill (aerobic), stretching exercise C: N/A: intraindividual assessment	N/A; intraindividual assessment	Intervention: 11 Control: N/A	Significant improvement in 4/6 exercises. Change in anaerobic threshold, respiratory compensation point and peak of exercise in SSc patients, P ≤0.05.	Yes	10; R	Pinto, 2011 [120]
P: Multi-faceted oral health intervention C: Usual care	Other SSc patients	Intervention: 26 Control: 22	Reduction of gingival index (GI) in intervention: 20.8% after 6 months Intervention vs Control at 6 months showed significant reduction in GI by 8%, p=0.0007.	Yes	11; W	Yuen, 2011 [121]
P: Orofacial exercise + multifaceted oral health intervention C: Usual care	Other SSc patients	Intervention: 26 Control: 22	F1-B: Intervention: 1.44 (2.83), P (intra-group difference) = 0.02 Control: -0.09 (3.16) p=0.71. P (inter-group difference) = 0.04 F(final)-B: Intervention: 2.14 (2.88), P (intra-group) = 0.001 Control: 2.26 (4.28), p=0.02. P (inter-group difference) = 0.19	No	11; I	Yuen, 2012 [122]
P: Stretching and mobility exercises at home using a newly developed telemedicine system C: Home kinesiotherapy protocol	SSc patients and RA-patients	Intervention: 20 (10 with RA) Control: 20 (10 with RA)	Dreiser´s index changes over time: Intervention: p=0.006 Control: p=0.006 Intervention vs Control: p=0.496, Interaction effect: p=0.984 HAQ changes over time: Intervention: p=0.016 Control: p=0.063 Intervention vs Control: p=0.287, Interaction effect: p=0.988 HAMIS right hand changes over time: Intervention: p=0.016 Control: p=0.104 Intervention vs Control: p=0.832, Interaction: p=0.246 HAMIS Left hand changes over time: Intervention: p=0.075 Control: p=0.529 Intervention vs Control: p=0.401, Interaction effect: p=0.124.	No	11; W	Piga, 2014 [123]

Intervention/management strategy	Comparator	N	Results	Efficacy	SD&OA*	Reference
P: Muscle strength C: No intervention	Healthy controls	Intervention: 20 Control: 20	SSc patients exhibit a reduction in quadriceps strength (p=0.0001), increased quadriceps fatigability (p=0.034), impaired pulmonary function and reduced 6MWD (p=0.0001) compared to control Quadriceps strength significantly correlated with 6MWD (Rho = 0.719, p=0.0004) and HAQ-DAI (Rho = -0.622, p=0.003) Significant correlations between quadriceps fatigability and maximal inspiratory, (Rho = 0.684, p=0.0009) and expiratory pressure (Rho = 0.472, p=0.035).	N/A	1; R	Lima, 2015 [124]
P: Hand stretching exercise and weekly phone call with occupational therapist, with specific timetable for when to conduct exercise C: Hand stretching exercise and weekly phone call with occupational therapist	Other SSc patients	Intervention: 15 Control: 16	Intervention: T0: 5.75 median (IQR 4.5, 6.5) T1: 6.7 (5.6, 7.3), p<0.0001 T2: 6.8 (6.15, 8), p<0.001 Other score such as COPM satisfaction, significant at both T0-T1 & T0-T2. HAQ, SF-36 (mental) significant in T0-T2 Control: T0: 5.27 (4.6, 6.4), T1: 5.53 (4.9, 6.7) T2: 5.4 (4.7, 7.1), p<0.04 HAQ significant in both T0-T1 & T0-T2. SF-36 (mental) significant in T0-T2.	Yes	11; I	Stefanantoni, 2016 [125]
P: Hand stretching & hip exercise, ergotherapy, thermal & mud bath, whirlpool therapy, soft tissue massage of the hands and joints C: Same as intervention, but excluding treatment of the hands.	Other SSc patients	Intervention: 31 Control: 22	Intervention: T0: 1.125 median, (IQR 0.6-1.6) T6: 0.75 (0.25-1.5) p=0.017 Control: T0: 0.875 (0.4-1.2) T6: 0.875 (0.4-1.4) p=0.442	Yes	10; R	Horváth, 2017 [126]
P: Personalized physical therapy session with physiotherapist and occupational therapist C: Usual care	Other SSc patients	Intervention: 110 Control: 108	Personalized physical therapy: 1.19 (0.74) (n=93) Usual care: 1.2 (0.74) (n=87) p=0.86	No	11; R	Rannou, 2017 [127]

Intervention/management strategy	Comparator	N	Results	Efficacy	SD&OA*	Reference
P: Exercise habits C: No intervention	Other SSc patients	Intervention: 389 Control: 363	HAQ, mean (SD): Exercise, 0.7 (0.7) Non-exercise: 0.9 (0.7) RR (95%CI): 0.26 (0.16, 0.36) PROMIS-29: Exercise was significantly associated with higher scores for function & social roles, lower score for anxiety, depression and fatigue. Furthermore, exercise was significantly associated with age, more years of education and non-smoking.	N/A	5; I	Azar, 2018 [128]
P: Manual therapy and physiotherapy, three weeks every year for three years C: N/A: intraindividual assessment	N/A; intraindividual assessment	Intervention: 43 Control: N/A	T0 (admission): 1.2 (0.6), T1(discharge): 0.8 (0.6), T2: 1.3 (0.6), T3: 1.0 (0.6), T4: 1.4 (0.7), T5: 1.1(0.7) T0-T1: p<0.0001 T2-T3: p<0.0001 T4-T5: p<0.0001	Yes	10; R	Brignoli, 2018 [129]
P: Intervention 1: HIIT (cycling) twice a week for 12 weeks Intervention 2: HIIT (arm cranking) twice a week for 12 weeks C: No training protocol	Other SSc patients	Intervention 1: 11 Intervention 2: 11 Control: 12	CVC: no significant changes after intervention ΔTcpO2: non-significant increase in intervention 2 (p=0.59) VO2max and EQ-5D: significant increase in both interventions (p<0.05 and p<0.001 respectively)	No	11; W	Mitropoulos, 2018 [130]
P: Thermal modalities, tissue mobilisation, and upper extremity exercises with occupational therapist C: N/A: intraindividual assessment	N/A; intraindividual assessment	Intervention: 21 Control: N/A	Significant improvement of QuickDASH (p=0.0012) and PROMIS (p=0.004)	Yes	10; R	Murphy, 2018 [131]
P: Paraffin bath and hand exercises C: Hand exercises without wax bath	Other SSc patients	Intervention: 17 Control: 19	Inter-group comparison showed no evidence of effectiveness Intervention vs Control (mean (95%CI)): -1.5 (-3.6, 0.6), p=0.16 at 9 weeks 1.9 (-1.1, 5.0), p=0.20 at 18 weeks	No	11; I	Gregory, 2019 [132]
P: Paraffin bath and hand exercises C: Water bath, hand exercise	Other SSc patients	Intervention: 43 Control: 43	HAMIS changes after 6 months: Intervention: -2.6 (95%CI: -4.4, -0.8), p<0.05 Control: -3.3 (-5.2 -1.5), p<0.05 Changes after 12 months: Intervention: -3.0 (-4.8 -1.2), p<0.05 Control: -2.9 (-4.6 -1.1), p<0.05	No	11; I	Kristensen, 2019 [133]

Intervention/management strategy	Comparator	N	Results	Efficacy	SD&OA*	Reference
P: Home based self-management programme that consisted of a booklet and information about SSc C: N/A: intraindividual assessment	N/A; intraindividual assessment	Intervention: 22 Control: N/A	Pain-VAS: T0: 3.97 (2.92) T1: 2.61 (2.11) T2: 2.21 (2.07) p=0.0022, effect-size (ES) = 0.695 CHFS: T0: 19.24 (15.78) T1: 16.86 (15.42) T2: 12.48 (12.04) p<0.0001, ES = 0.482	Yes	10; R	Landim, 2019 [134]
P: Combined programme with HIIT and resistance training, twice weekly for 12 weeks C: No intervention	Other SSc patients	Intervention: 16 Control: 16	Significant improvements in CVC, ΔTcpO2 and VO2max after 12 weeks in intervention vs control (p<0.05 for all). No significant changes between 3- and 6-month follow-up.	Yes	11; W	Mitropoulos, 2019 [135]
P: Tai Chi C: Home exercise	Other SSc patients	Intervention: 14 Control: 14	Tai Chi: all variables p<0.05 Home-exercise only trunk lateral endurance p=0.007 and Pittsburg sleep quality test p=0.036 Delta value in all variables p<0.05 except trunk lateral endurance test p=0.061	Yes/no	11; W	Cetin, 2020 [136]
P: Home-based aerobic exercise (stationary bike), muscular endurance training (upper limbs) and stretching (hands) C: Usual care	Other SSc patients	Intervention: 22 Control: 22	6MWT: Intervention: T0: 486 (458-513-IQR) T1: 532 (504-561) Control: T0: 464 (431-497) T1: 459 (427-490) p<0.001	Yes	11; I	Filippetti, 2020 [137]
P: Self-management programme composed of a booklet C: No intervention	Other SSc patients	Intervention: 40 Control: 17	Improvement noted only in intervention group, P≤0.05, with large effect size	Yes	10; I	Landim, 2020 [138]
P: Orofacial exercise programme followed by oral hygiene care advice C: Oral hygiene care advice followed by orofacial exercise programme	Other SSc patients	Intervention: 28 Control: 28	T1: Intervention: Mean difference 1.94 (1.19-2.69) p<0.001 Control: -0.09 (-0.43-0-24) p=0.579 T2: Intervention: 0.38 (0.44-1.20) p=0.352 Control 1.71 (0.91-2.50) p<0.001	Yes	11; I	Cüzdan, 2021 [139]
P: High-intensity interval exercise (HIIT) C: N/A: intraindividual assessment	N/A; intraindividual assessment	Intervention: 11 Control: N/A	All parameters p<0.05 except domain Disability index p=0.0571	Yes/no	10; I	Defi, 2021 [140]

Intervention/management strategy	Comparator	N	Results	Efficacy	SD&OA*	Reference
P: Booklet, isometric hand exercise and self-administrated stretching C: Booklet alone	Other SSc patients	Intervention: 32 Control: 30	Improvement percentage-wise for HAMIS, Duruoz Hand Index (DHI), HAQ-DI and Handgrip strength (p=< 0.05). SF-36: significant improvement in 3/8 domains. Change in mRSS ns.	Yes	11; I	Gokcen, 2021 [141]
P: Home exercises for temporomandibular joint, mimic, masticatory and cervical spine muscles C: Home exercises and combined physiotherapeutic procedures performed by a physiotherapist	Other SSc patients	Intervention: 25 Control: 22	Both intervention & control showed improved clinical parameters but better result in the intervention group. Differences in effect between groups at T1: MHISS total: Intervention: -7.08 (8.06) Control: -2.00 (5.72) p=0.0178 MHISS mouth opening: Intervention: -4.04 (4.46) Control: -0.91 (3.32) p=0.0098	Yes	11; W	Maddali Bongi, 2021 [142]
P: Intensive occupational therapy and app-delivered home exercise. C: App alone	Other SSc patients	Intervention: 16 Control: 16	T1: QuickDASH: Intervention: -8.5 (3.9), p=0.03 App alone-group (AA): -3.1 (4.3), p=0.47 MCID: intervention: 38% (n=16) AA 21% (n=14) T2: AA achieved equivalent improvement with mean of -6.4 point MCID intervention: 50% (n=16) app-alone: 64% (n=11)	Yes	11; W	Murphy, 2021 [143]
Patient education and self-management						
P: Educational programme C: N/A: intraindividual assessment	N/A; intraindividual assessment	Intervention: 6 Control: N/A	SEP: 3/6 showed improvement SEF: showed stable among all 6 patients SEOS: showed improvement in 5/6 patient, while the remaining patient had excellent score from the beginning	Yes/no	10; I	Samuelson, 2000 [144]
P: Educational programme C: Educational programme	SLE-patients	Intervention: 5 with SSc, 5 with SLE Control: N/A	Overall satisfaction with both programmes, however SLE revealed a more positive feeling about their attendance. Both groups felt that it was valuable to meet individuals with the same disease and welcomed an educator within the program planning team. Both groups were unanimously satisfied with the content and format. Behaviour-wise, SLE patients revealed more definite life changes than SSc patients.	Yes	9; R	Brown, 2004 [36]

Intervention/management strategy	Comparator	N	Results	Efficacy	SD&OA*	Reference
P: Multidisciplinary disease management programme C: N/A: intraindividual assessment	N/A; intraindividual assessment	Intervention: 41 Control: N/A	ICQ (helplessness): T0: 13.1 (4.2) T1: -1.24 (-2.27, -0.22), ES=-0.32 T2: -1.05 (-2.03, -0.08), ES: -0.26 p=0.02 Acceptance of limitations: T0: 29 (4.9) T1: -1.60 (-3.22, 0.02), ES:-0-28 T2: -2.24 (-3.73, -0.75), ES: -0.44 p=0.01 Other parameters such as VAS, HAQ DI, IRGL showed NS.	Yes/no	10; R	Kwakkenbos, 2011 [145]
P: Mail-delivered self-management programme C: N/A: intraindividual assessment	N/A; intraindividual assessment	Intervention: 62 (49 completers, 13 non-completers) Control: N/A	Self-efficacy, domain pain: T0: 5.2 (2.7), T1: 6.4 (2.7) Changes: 1.2 (2.9), p=0.006 Multidimensional assessment of fatigue scale, CES-D, HAQ, SFAQ, no. of ED visits showed NS It showed significantly more married persons completed the program, suggesting a supportive partner may play a roll (married completers: 36 (73), married non-completers: 5 (52))	Yes/no	10; I	Poole, 2013 [146]
P: Self-management website with 10 modules C: N/A: intraindividual assessment	N/A; intraindividual assessment	Intervention: 16 Control: N/A	SE scale: p=0.084 HeiQ: T0: 114.6 (9.9), T1: 120.6 (7.7), p=0.012, ES: 0.72 PAM: T0: 38.5 (5.2), T1: 41.5 (5.0), p=0.025, ES 0.62 CES-D: T0: 20.7 (9.6), T1: 16.4 (8.9), p=0.013, ES -0.71 Fatigue VAS: T0: 8.1 (1.4), T1: 7.6 (1.4), p=0.05, ES -0.55	Yes/no	10; R	Poole, 2014 [147]
P: Informative meeting followed by occupational therapy C: Informative meeting alone	Other SSc patients	Intervention: 10 Control: 10	HAQ: Intervention: T0: 14.9 (11.3) T1: 11.8 (7.1) Control T0: 13.3 (13.1) T1: 13.9 (13.5). p<0.05	Yes	10; R	Zanatta, 2017 [148]
P: Self-management website C: Book	Other SSc patients	Intervention: 134 Control: 133	PROMIS T0-T1 NS between groups. EQ5D-Index: Intervention: T0-T1: -0.002 (0.14) Control: 0.02 (0.14) p=0.05	Yes/no	11; W	Khanna, 2019 [149]
P: Home based self-management programme that consisted of a booklet and information about SSc C: N/A: intraindividual assessment	N/A; intraindividual assessment	Intervention: 22 Control: N/A	Pain-VAS: T0: 3.97 (2.92) T1: 2.61 (2.11) T2: 2.21 (2.07) p=0.0022, effect-size (ES) = 0.695 CHFS: T0: 19.24 (15.78) T1: 16.86 (15.42) T2: 12.48 (12.04) p<0.0001, ES = 0.482	Yes	10; R	Landim, 2019 [134]

Intervention/management strategy	Comparator	N	Results	Efficacy	SD&OA*	Reference
P: Scleroderma Support group Leader Education (SPIN-SSLED) programme C: N/A: intraindividual assessment	N/A; intraindividual assessment	Intervention: 10 Control: N/A	SSGLSS, baseline mean (SD), 124.4 (22) and post training 159.2 (17.1) Feasibility outcome: attendance rate 95%, 123/130 sessions Overall feedback 9.4/10 No concerns related adverse event was reported	Yes	10; R	Thombs, 2019 [150]
P: Face-to-face training + standard information programme (i.e., brochures, DVD) C: Educational materials alone	Other SSc patients	Intervention: 31 Control: 32	ITT: Mouth opening: Intervention 0.31 (0.13-0.49), p=0.003 Control: 0.13 (0.01-0.25) 0.06 inter-group difference p=0.10 Per-protocol analysis: inter-group difference p=0.02	Yes/no	11; I	Uras, 2019 [151]
P: Self-management programme composed of a booklet C: No intervention	Other SSc patients	Intervention: 40 Control: 17	Improvement noted only in intervention group, P≤0.05, with large effect size	Yes	10; I	Landim, 2020 [138]
P: Videoconference-based group intervention that provided education and practice with mental health coping strategies C: No intervention	Other SSc patients	Intervention: 86 Control: 86	PROMIS anxiety score immediately after intervention: -1.57 (95% CI: 3.59, 0.45)	No	11; I	Thombs, 2021 [152]
Bathing and thermal modalities						
P: Paraffin bath and hand exercises C: N/A: intraindividual assessment	N/A; intraindividual assessment	Intervention: 17 Control: N/A	Improvement in finger flexion and extension deficit, p<0.01 Thumb abduction, volar flexion wrist, p<0.05 VAS stiffness and VAS skin, p<0.001	Yes	10; I	Sandqvist, 2004 [113]
P: Hand stretching & hip exercise, ergotherapy, thermal & mud bath, whirlpool therapy, soft tissue massage of the hands and joints C: Same as intervention, but excluding treatment of the hands.	Other SSc patients	Intervention: 31 Control: 22	Intervention: T0: 1.125 median, (IQR 0.6-1.6) T6: 0.75 (0.25-1.5) p=0.017 Control: T0: 0.875 (0.4-1.2) T6: 0.875 (0.4-1.4) p=0.442	Yes	10; R	Horváth, 2017 [126]

Intervention/management strategy	Comparator	N	Results	Efficacy	SD&OA*	Reference
P: Thermal modalities, tissue mobilisation, and upper extremity exercises with occupational therapist C: N/A: intraindividual assessment	N/A; intraindividual assessment	Intervention: 21 Control: N/A	Significant improvement of QuickDASH (p=0.0012) and PROMIS (p=0.004)	Yes	10; R	Murphy, 2018 [131]
P: Taohong Siwu Decoction (TSD) + oral Prednisone (10mg daily) C: Placebo + oral prednisone	Other SSc patients	Intervention: 71 Control: 71	MRSS: Intervention: T2: p<0.05 Control: NS	Yes	11; I	Zhou, 2018 [153]
P: Paraffin bath and hand exercises C: Hand exercises without wax bath	Other SSc patients	Intervention: 17 Control: 19	Inter-group comparison showed no evidence of effectiveness Intervention vs Control (mean (95%CI)): -1.5 (-3.6, 0.6), p=0.16 at 9 weeks 1.9 (-1.1 to 5.0), p=0.20 at 18 weeks	No	11; I	Gregory, 2019 [132]
P: Paraffin bath and hand exercises C: Water bath, hand exercise	Other SSc patients	Intervention: 43 Control: 43	HAMIS changes after 6 months: Intervention: -2.6 (95%CI -4.4, -0.8), p<0.05 Control: -3.3 (-5.2 -1.5), p<0.05 Changes after 12 months: Intervention: -3.0 (-4.8 -1.2), p<0.05 Control: -2.9 (-4.6 -1.1), p<0.05	No	11; I	Kristensen, 2019 [133]
P: Intervention 1 (I1): Hand immersion in Bastian CO_2 bath. Intervention 2 (I2): Hand immersion in hot water C: Hand immersion in Bastian CO_2 bath	Other SSc patients and healthy controls	Intervention: 12 in each intervention group Control: 12	RI at baseline and during treatment was higher in both I1 and I2 than healthy control, p<0.01 RI at baseline between I1 and I2 was not different Treatment-induced reduction in RI was significant in I1, p<0.01 directly after CO_2 bath with a non-significant lasting tendency 10 to 20mins after I2 and healthy control showed no significant changes in RI at all time points	Yes	11; I	Lange, 2019 [154]

Intervention/management strategy	Comparator	N	Results	Efficacy	SD&OA*	Reference
P: Ozone bath, 2 series of 10 days per series with 10 days apart C: N/A: intraindividual assessment	N/A; intraindividual assessment	Intervention: 42 Control: N/A	Mean concentration (conc.) of IL-2sR decreased significantly from 1563.73 to 1249.86pg/ml, p=0.02 Mean conc. of neopterin decreased significantly from 12.06 to 10.9 nmol/ml, p=0.012 Absolute monocytosis decreased insignificantly from 1.694 to 1.480g/l, p=0.2 Correlations between the disease duration and conc. of IL-2sR were weak and negative, while between disease duration and concentration of neopterin were weak and positive.	Yes	10; I	Nowicka, 2019 [155]
Complementary and alternative medicine						
P: Active phase of study: Transcutaneous Electrical Nerve Stimulation (TENS) Prolonged study phase: Patients trained to use TENS on a specific acupoints at home C: Active phase of study only	Healthy controls	Intervention: 17 Control: 9	TENS showed siginificantly increased sympathetic and vagal activities vs baseline (HRV, p=0.02 vs p=0.004) Prolonged TENS application during prolonged phase of study showed a normalization of sympathovagal balance (p=0.04), decreased GI symptoms score (p=0.02), increased physical function score in SF-36 which correlated with the changes in sympathovagal balance (r=0.6, p=0.02).	Yes	10; W	Sallam, 2007 [156]
P: Deep oscillation, Biofeedback C: No intervention	Other SSc patients	Intervention: Do: 10 Biof: 8 Control: 10	VAS improvement in Biofeedback vs control p<0.05. Deep oscillation vs control p=0.055	Yes/no	11; W	Sporbeck, 2012 [157]
P: TENS C: N/A: intraindividual assessment	N/A; intraindividual assessment	Intervention: 17 Control: N/A	GMA: percentage of normal slow waves increased after 2 weeks from 63.4±5.6% to 82.1±4.2%, p=0.02. NS improvement after 1 30-minute session Questionnaire: Improvement only in nocturnal pain (p=0.04) Acute decrease in VIP (p<0.01). Acute increase in IL-6 (p<0.04), but decrease after 2 weeks (p<0.05).	Yes	10; I	McNearney, 2013 [158]

Intervention/management strategy	Comparator	N	Results	Efficacy	SD&OA*	Reference
P: Biofeedback training C: Biofeedback training	Patients with functional faecal incontinence	Intervention: 13 Control: 26	FISI T0-T1: SSc: -11 (8), p=0.001 Functional FI: -9 (8), p<0.0001 FISI at T2: SSc: -10 (8), p=0.008 Functional FI: -11 (10), p=0.08 Effect on QoL T0-T1: SSc: -2.5 (2), p=0.001 Functional FI: -3 (2), p<0.0001 Effect on QoL at T2: SSc: -3 (1.8), p=0.008 Functional FI: -2.9 (3.1), p=0.06	Yes/no	2; R	Collins, 2016 [159]
P: Taohong Siwu Decoction (TSD) + oral Prednisone C: Placebo + oral prednisone	Other SSc patients	Intervention: 71 Control: 71	MRSS: Intervention: T2: p<0.05 Control: NS	Yes	11; I	Zhou, 2018 [153]
P: Received Ciplukan herb (Physalis angulata Linn) 250mg C: Placebo	Other SSc patients	Intervention: 29 Control: 30	MRSS: significant decrease in intervention vs control (35.9% vs 6.3%, p<0.001) P1NP level: relative decrease (17.8% vs 0.7%, p=0.002 ESR, BAFF, sCD40L: no decrease in both group Positive correlation between MRSS and P1NP level: r=0.236, p=0.036	Yes	11; I	Dewi, 2019 [160]
P: Tai Chi C: Home exercise	Other SSc patients	Intervention: 14 Control: 14	Tai Chi: all variables p<0.05 Home-exercise only trunk lateral endurance p=0.007 and Pittsburg sleep quality test p=0.036 Delta value in all variables p<0.05 except trunk lateral endurance test p=0.061	Yes/no	11; W	Cetin, 2020 [136]
P: Holoil (contained Neem oil and Hypericum perforatum) C: Usual care	Other SSc patients	Intervention: 21 Control: 20	Antibiotic request: Holoil: 4 (12.1%), Control: 11 (42.3%), p=0.0146 Debridement + surgical removal: Holoil: 1(3%), Control: 6 (23.1%), p=0.0367 Skin ulcer changes (healing): Holoil: 15 (45.4%), Control: 4 (15.4%), p=0.0237 Skin ulcer changes (healing time in days): Holoil: 40.1 (16.3), Control: 96.3 (10.7), p=0.0001	Yes	2; I	Giuggioli, 2020 [161]
Manual therapy						
P: Connective tissue massage, Mc Mennell joint manipulation and home exercise C: Home exercise programme alone	Other SSc patients	Intervention: 20 Control: 20	Intervention: Fist closure, HAMIS, Cochin hand functional disability scale, (HAQ, PSI, MSI) of SF-36 p<0.05 Control: only fist closure p<0.0001	Yes	11; I	Bongi, 2009 [116]

Intervention/management strategy	Comparator	N	Results	Efficacy	SD&OA*	Reference
P: Tailored rehabilitation program with manual therapy and exercise C: Educational advice and information about SSc	Other SSc patients	Intervention: 10 Control: 10	Intervention group: HAMIS: T0-T1: p<0.005 T0-T2: p<0.01 Mouth opening: T0-T1: p<0.05 T0-T2: p<0.01// MSI and PSI (SF-36), HAQ, DURUOZ scale, Fist closure, FACE-VAS significant in T0-T1, NS in T0-T2 Hand opening NS in both T0-T1- and T0-T2	Yes	11; W	Maddali Bongi, 2009 [117]
P: Manual lymph drainage (MDL) C: No intervention	Other SSc patients	Intervention: 20 Control: 15	HAMIS left hand: Interventional group (IG) vs observational group (OG) T0: NS T1: p<0.01 T2: p<0.05 HAMIS right hand: IG vs OG: T0: NS T1: p<0.01 T2: p<0.05 IG: HAQ, PSI & MSI of SF-36 improved at T1 p<0.001 Only PSI improvement maintained at T2 p<0.001 OG: no improvement at T1 and T2 was observed	Yes	11; R	Bongi, 2011 [162]
P: Combined connective tissue massage, Kabat´s technique, kinesitherapy and home mimic exercise program C: Home exercise programme alone	Other SSc patients	Intervention: 20 Control: 20	Intervention: Mouth opening, T0: 3.8 (1.06), T1: 4.28 (0.99), T2: 4.58 (1.16) T0-T1: p<0.05, T0-T2 p<0.001. Control: Mouth opening: T0: 4.0 (1.09), T1: 4.48 (1.04), T2: 4.1 (1.05) T0-T1: p<0.001 T0-T2: HAQ & SF-36 ns.	Yes	11; I	Maddali Bongi, 2011 [119]
P: Daily home programme (warm gloves, Thai massage, stretching) C: Same programme without gloves	Other SSc patients	Intervention: 14 Control: 14	HAMIS, median (IQR): Intervention: Left hand: T0: 2 (1-2), T1: 1 (1-1), p<0.05 Right hand: T0: 2 (1-2), T1: 1 (1-1), p<0.05 Control: Left hand: T0: 2 (1-2), T1: 1 (1-1.25), p<0.05 Right hand: T0: 2 (1-2), T1: 1 (0-1), p<0.05 Wearing gloves resulted in better thumb mobility.	Yes	11; W	Vannajak, 2014 [163]
P: Osteopathic manipulative treatment C: N/A: intraindividual assessment	N/A; intraindividual assessment	Intervention: 6 Control: N/A	4/6 improved in hand stiffness, ROM of fingers, most improved distal upper limbs skin score Disease improvement: (pain 6/6, dyspnoea 3/4, fatigue 4/6) Functional status: (global disability 5/5, work disability 4/6, quality of life: physical 6/6, mental 4/6)	Yes/no	4; I	O'Connor, 2016 [164]

Intervention/management strategy	Comparator	N	Results	Efficacy	SD&OA*	Reference
P: Hand stretching & hip exercise, ergotherapy, thermal & mud bath, whirlpool therapy, soft tissue massage of the hands and joints C: Same as intervention, but excluding treatment of the hands.	Other SSc patients	Intervention: 31 Control: 22	Intervention: T0: 1.125 median, (IQR 0.6-1.6) T6: 0.75 (0.25-1.5) p=0.017 Control: T0: 0.875 (0.4-1.2) T6: 0.875 (0.4-1.4) p=0.442	Yes	10; R	Horváth, 2017 [126]
P: Manual therapy and physiotherapy, three weeks every year for three years C: N/A: intraindividual assessment	N/A; intraindividual assessment	Intervention: 43 Control: N/A	T0 (admission): 1.2 (0.6), T1(discharge): 0.8 (0.6), T2: 1.3 (0.6), T3: 1.0 (0.6), T4: 1.4 (0.7), T5: 1.1(0.7) T0-T1: p<0.0001 T2-T3: p<0.0001 T4-T5: p<0.0001	Yes	10; R	Brignoli, 2018 [129]
Dietary therapy and nutrition						
P: Probiotics C: N/A: intraindividual assessment	N/A; intraindividual assessment	Intervention: 10 Control: N/A	Total GIT score: T0: 0.73 (0.35) T1: 0.43 (0.29) p<0.01 Effect size (ES): 0.82 (large) Reflux: T0: 0.74 (0.56) T1: 0.64 (0.48) p<0.05 ES: 0.18 (small) Bloating/distention: T0: 2.15 (0.67) T1: 0.97 (0.77) p<0.01 ES: 1.76(large)	Yes	10; I	Frech, 2011 [165]
P: Individually adapted nutritional intervention C: N/A: intraindividual assessment	N/A; intraindividual assessment	Intervention: 9 Control: N/A	NS improvement observed in all the parameters	No	10; I	Ortiz-Santamaria, 2014 [166]
P: Medical nutrition therapy C: N/A: intraindividual assessment	N/A; intraindividual assessment	Intervention: 18 Control: N/A	Abridged Scored Patient-Generated Subjective Global Assessment (abPGSGA): T0: 13.1 (7.2), T1: 7.6 (5.2), p=0.01 Lean body mass/height: T0: 5.6 (0.8), T1: 5.8 (0.8), p=0.05 Classified as sarcopenic, No. (%): T0: 7 (54) T1: 5 (39) p=0.02 Calorie intake, p=0.12 Macronutrient distribution (% fat, protein, carbohydrate): NS	Yes/no	10; I	Doerfler, 2017 [167]

Intervention/management strategy	Comparator	N	Results	Efficacy	SD&OA*	Reference
P: Probiotics C: Placebo	Other SSc patients	Intervention: 19 Control: 21	Total GIT score: T1-T0: Intervention -0.13 (0.07) Control: -0.14 (0.06) p=0.847 T2-T0: Intervention: -0.18 (0.07) Control: -0.05 (0.06) p=0.141 Reflux: T1-T0: Intervention: -0.10 (0.11) Control: -0-10 (0.07) p=0.978 T2-T0: Intervention: -0.22 (0.05) Control: 0.05 (0.07) p=0.004	Yes/no	11; I	Low, 2019 [168]
P: Probiotics C: Placebo	Other SSc patients	Intervention: 37 Control: 36	UCLA GIT: Intervention: T0: 0.8 (0.3), T1: 0.3 (0.2) Control: T0: 0.7 (0.2), T1: 0.3 (0.2) P (interaction)=0.507 P(treatment)=0.846 Th17: Intervention: T0: 2.5 (1.9), T1: 1.6 (0.8) Control: T0: 2.2 (1.2) T1: 2.5 (2.2) P(treatment)=0.003 NS changes in Th1,2 and Treg	No	11; W	Marighela, 2019 [169]
P: Faecal microbiota transplantation C: Placebo	Other SSc patients	Intervention: 5 Control: 4	2 placebos had procedure-related serious adverse event (AE)-1 developed laryngospasm, 1 encountered duodenal perforation during gastroduodenoscopy Decreased bloating, diarrhoea and/ or faecal incontinence was observed in 4/5 patient in the interventional group and 2/4 in the placebo group.	Yes/no	11; I	Fretheim, 2020 [170]
Phototherapy and laser treatment						
P: Infrared A (IRA) C: N/A: intraindividual assessment	N/A; intraindividual assessment	Intervention: 58 Control: N/A	6 weeks follow-up: Tau-value: 8.39 to 5.36 (95%CI: (4.44, 6.27), p<0.001). VAS RP: 1.17 to 0.94 (95%CI: (0.77, 1.10), p=0.005) = 19.7% reduction. mRSS: 12.9 - 9.8 (95%CI: (7.9, 11.8), p<0.001) = 24% reduction. DAS28: 4.2 - 3.9 (95%CI: (3.5, 4.3), p=0.021).	Yes	10; I	Foerster, 2005 [171]
P: Intense pulsed light (IPL) C: N/A: intraindividual assessment	N/A; intraindividual assessment	Intervention: 20 Control: N/A	Photograph grading: 8/12 "improved" or "much improved" at both 1- and 6-month follow-up. LDI (median ((IQR)): Baseline: 2.66 (1.78–3.93) 1 month: 1.70 (1.07–2.55), p=0.006 6 months: 2.05 (1.42–2.36), p=0.008	Yes/no	10; R	Murray, 2012 [172]

Intervention/management strategy	Comparator	N	Results	Efficacy	SD&OA*	Reference
P: Pulsed dye laser & intense pulsed light (PDL & IPL) C: N/A: intraindividual assessment	N/A; intraindividual assessment	Intervention: 19 Control: N/A	Dermoscopy: PDL > IPL, both p=0.01. 100% of patients experienced overall improvement with phototherapy (88% with PDL and 69% with IPL)	Yes	10; I	Dinsdale, 2014 [173]
P: Pulsed dye laser (PDL) C: N/A: intraindividual assessment	N/A; intraindividual assessment	Intervention: 23 Control: N/A	Mean PDL session required to achieve clearance: 3 (range 1-7) Recurrence: 2 cases recurred at 6 months, 4 cases recurred at 18-36 months PDL generally well tolerated: mean Tolerance score 6.5 (on a 0-10 scale) mean Satisfaction score: 8.75 (on a 0-10 scale) and 100% of patients would repeat the treatment.	Yes	4; I	Burillo-Martinez, 2017 [174]
P: Intense pulsed light (IPL) C: N/A: intraindividual assessment	N/A; intraindividual assessment	Intervention: 15 Control: 5	Increase in inter-ridge distance of 4.1 mm (95% confidence interval, 1.726–6.638, p<0.005) from baseline to six-month follow-up (after last session). No significant increase in inter-incisal distance. Subjective improvement of lip movements.	Yes/no	10; I	Rosholm Comstedt, 2017 [175]
P: Low level light therapy (IR + red + blue) C: N/A: intraindividual assessment	N/A; intraindividual assessment	Intervention: 8 Control: N/A	No safety concerns were encountered, and all the participants considered that the treatment took 'just the right amount of time' and was 'feasible' VAS-reduction (patient assessment) = 7.1 units per visit (95%CI: (–8.6, –5.7), p<0.001), VAS-reduction (clinician assessment) = 5.2 units per visit (95%CI: –6.5, –3.8) (p<.001) LDI: increased mean perfusion in both ulcer core and periphery (p=0.0013 & p=0.04 resp.)	Yes	10; R	Hughes, 2019 [176]
Shockwave therapy						
P: ESWT with pressure pulses C: N/A: intraindividual assessment	N/A; intraindividual assessment	Intervention: 30 Control: N/A	RSS improvement after 1st sitting and remained until after 30d, p<0.05 VAS improved after 1st sitting and remained after 90d, p<0.05 No differences in skin thickness CECs and EPCs increased after 1st sitting, p<0.05 Biochemical markers showed no variation before and after treatment	Yes	10; I	Tinazzi, 2011 [177]

Intervention/management strategy	Comparator	N	Results	Efficacy	SD&OA*	Reference
P: ESWT C: N/A: intraindividual assessment	N/A; intraindividual assessment	Intervention: 8 Control: N/A	After first ESWT session, VEGF and vWF significantly decreased, (p=0.007 and p=0.004 respectively) but remained stable thereafter. At end of intervention, there were no changes in total RSS, RSS at fingers was significantly reduced (p=0.018) and durometer analysis showed significant decrease at finger-pads and at treated forearm (p<0.0001 and p=0.021 respectively).	Yes	10; I	Belloli, 2013 [178]
P: ESWT for digital ulcers in SSc C: Usual care	Other SSc patients	Intervention: 9 Control: 14	ESWT group: No. of ulcer decreased from 5.8 (baseline) to 1.2 (week 8) Conventional treatment alone: mean no. of ulcer increased from 3.1 (baseline) to 3.8 (week 8).	Yes	10; I	Saito, 2016 [179]
P: ESWT for digital ulcers in SSc C: N/A: intraindividual assessment	N/A; intraindividual assessment	Intervention: 9 Control: N/A	Ulcers showed signs of healing after 1 session, and no. decreased from 5.4 to 1.1 at 9 weeks Mean size of ulcers decreased from 10.9 to 2.5 mm at 20 weeks Average improvement on HAQ, EQ-5D and PainVision system was observed	Yes	10; I	Saito, 2016 [180]
Healthcare models						
P: Customized intervention for dental hygiene and upper extremity's function C: N/A: intraindividual assessment	N/A; intraindividual assessment	Intervention: 17 Control: N/A	Patient hygiene performance index (PHP): T0 vs T2: p<0.05 No. of sites bleeding on probing: T1 vs T2: p<0.05 No. of teeth with supragingival calculus: T0 vs T2 and T1 vs T2: p<0.05 No differences in any upper extremity measures or oral aperture	Yes	10; I	Poole, 2010 [181]
P: Multidisciplinary disease management programme C: N/A: intraindividual assessment	N/A; intraindividual assessment	Intervention: 41 Control: N/A	ICQ (helplessness): T0: 13.1 (4.2) T1: -1.24 (-2.27, -0.22), ES=-0.32 T2: -1.05 (-2.03, -0.08), ES: -0.26 p=0.02 Acceptance of limitations: T0: 29 (4.9) T1: -1.60 (-3.22, 0.02), ES:-0-28 T2: -2.24 (-3.73, -0.75), ES: -0.44 p=0.01 Other parameters such as VAS, HAQ DI, IRGL showed NS.	Yes/no	10; R	Kwakkenbos, 2011 [145]

Intervention/management strategy	Comparator	N	Results	Efficacy	SD&OA*	Reference
P: Multidisciplinary team care C: Usual care	Other SSc patients	Intervention: 28 Control: 25	At T1: improvement in grip strength (2.2 vs -1.8kg, p=0.001), MMO (1.4 vs -0.9mm, p=0.011), 6MWD (42.8 vs 3.9m, p=0.021), HAQ (-0.18 vs 0.13, p=0.025) in the intervention group At T2: effect of grip strength persisted.	Yes	11; I	Schouffoer, 2011 [182]
Hyperbaric oxygen or ozone therapy						
P: Hyperbaric oxygen therapy C: N/A: intraindividual assessment	N/A; intraindividual assessment	Intervention: 6 Control: N/A	Mean no. of session to achieve healing was 41 (range 30-60), 53 for DU and 28 for lower extremity ulcer (LU) 4 patients healed completely, 2 patients had near-complete healing Amputation was not required for any	Yes/no	4; I	Mirasoglu, 2017 [183]
P: Oxygen-ozone therapy C: Usual care	Other SSc patients	Intervention: 25 Control: 25	Grading of DU healing: intervention vs control: 96% (24/25) vs 44% (11/25), $\chi 2=7.26$, p=0.007 After treatment, significant reduction of wound size is observed in intervention vs control, 0.75 (0.3 vs 2.44 (0.8), p<0.001 VEGF higher in intervention, 83.96 (9.7) vs 67.9 (6.55), p<0.001 ETAR lower in intervention, 3.1 (1.1) vs 4.6 (1.2), p<0.001	Yes	11; W	Hassanien, 2018 [184]
P: Ozone bath, 2 series of 10 days per series with 10 days apart C: N/A: intraindividual assessment	N/A; intraindividual assessment	Intervention: 42 Control: N/A	Mean concentration (conc.) of IL-2sR decreased significantly from 1563.73 to 1249.86pg/ml, p=0.02 Mean conc. of neopterin decreased significantly from 12.06 to 10.9 nmol/ml, p=0.012 Absolute monocytosis decreased insignificantly from 1.694 to 1.480g/l, p=0.2 Correlations between the disease duration and conc. of IL-2sR were weak and negative, while between disease duration and concentration of neopterin were weak and positive.	Yes	10; I	Nowicka, 2019 [155]
Oral hygiene						
P: Customized intervention for dental hygiene and upper extremity's function C: N/A: intraindividual assessment	N/A; intraindividual assessment	Intervention: 17 Control: N/A	Patient hygiene performance index (PHP): T0 vs T2: p<0.05 No. of sites bleeding on probing: T1 vs T2: p<0.05 No. of teeth with supragingival calculus: T0 vs T2 and T1 vs T2: p<0.05 No differences in any upper extremity measures or oral aperture	Yes	10; I	Poole, 2010 [181]

Intervention/management strategy	Comparator	N	Results	Efficacy	SD&OA*	Reference
P: Multi-faceted oral health intervention C: Usual care	Other SSc patients	Intervention: 26 Control: 22	Reduction of gingival index (GI) in intervention: 20.8% after 6 months Intervention vs Control at 6 months showed significant reduction in GI by 8%, p=0.0007.	Yes	11; W	Yuen, 2011 [121]
P: Xylitol chewing gum C: Xylitol mouth rinse	Other SSc patients	Intervention: 6 Control: 7	MS score changes: After 10 mins chewing gum/ 2 mins mouth rinse: Intervention: 0.67 (0.82) Control: 0.00 (0.82) p=0.18 25 mins post xylitol exposure: Intervention: 0.33 (1.03) Control: -0.14 (0.69) p=0.45	No	11; I	Yuen, 2012 [185]
Others						
P: Autologous fat transplantation, two times three months apart C: N/A: intraindividual assessment	N/A; intraindividual assessment	Intervention: 10 Control: N/A	IvMHISS: Intervention T1 vs T0: p=0.0234, t: 2.794 Control: p=0.0022 t=4.445 Improvement between groups: p=0.962 t=0.049 MMO: Intervention T1 vs T0: p=0.017, t=2.999 Control: p=0.032, t=2.587 Difference of improvement between groups: p=0.5833 t=0.559 VAS difference between groups: p=0.034, t=2.556.	Yes	4; I	Onesti, 2016 [186]
P: Neuromuscular taping C: N/A: intraindividual assessment	N/A; intraindividual assessment	Intervention: 53 Control: N/A	CHFDS: T0/T4: p=0.000 T4-T0: p=0.000 T1-T0: p=0.000 HAMIS: T0/T4: p=0.000 T4-T0: p=0.31 T1-T0: p=0.000 VAS: T0/T4: p=0.000 T4-T0: p=0.000 T1-T2: p=0.000	Yes	10; I	Parisi, 2017 [187]
P: Animal-assisted intervention session with multidisiplinary team, weekly for 20 weeks C: C1: alternative social activity (cooking) C2: No intervention	Other SSc patients	Intervention: 14 Control: C1: 14 C2: 14	Animal-assisted intervention (AAI) showed significant decrease of anxiety level compare to C1 & C2, p<0.001 VAS lower in AAI p<0.001 and C1 p<0.01 STAI-T and TAS reduced in AAI p<0.001	Yes	10; I	Fiori, 2018 [188]

Intervention/management strategy	Comparator	N	Results	Efficacy	SD&OA*	Reference
P: Application of amniotic membrane to skin ulcers C: N/A: intraindividual assessment	N/A; intraindividual assessment	Intervention: 6 Control: N/A	3 patients with digital ulcer had complete healing in 1-3 weeks 2 with elbow ulcers healed in 7-9 weeks 1 with shin ulcer healed in 21 weeks 1 patient required a repeat application for a reoccurrence after 2 months All patients reported pain relief with this type of dressing which was not registered by a formal rating scale.	Yes	10; I	Frech, 2019 [189]

***Study design and overall appraisal (adapted from the Joanna Briggs Institute Manual for Evidence Synthesis [190]):**

Notation	Study design
1	Analytical cross-sectional study
2	Case-control study
3	Case report
4	Case series
5	Cohort study
6	Diagnostic test accuracy study
7	Economic evaluation
8	Prevalence study
9	Qualitative research
10	Quasi-experimental study
11	Randomised controlled trial
12	Meta-analysis, with or without systematic review

Notation	Overall appraisal
R	Robust
I	Intermediate
W	Weak

Abbreviations:

6MWT: 6 minutes walking test; abPGSGA: Abridged Scored Patient-Generated Subjective Global Assessment; AC: acupuncture; ADL: activities in daily living; ANA: anti-nuclear antibody; aPL: antiphospholipid; AUC: area under the curve; BASS: Body Area Satisfaction Scale; BDI: Beck Depression Inventory; BF: breathing frequency; BF/CBT: Biofeedback-assisted cognitive-behavioural treatment; BMD: bone mineral density; BMI: body mass index; BP: bodily pain; BPI: Brief Pain Inventory; C: intervention/management strategy for the comparator group C3: complement component 3; C4: complement component 4; CASE: Children's Arthritis Self-Efficacy scale; CAT: complementary and alternative therapies; CC: calcinosis cutis; CCL4: chemokine (C-C motif) ligands 4; CECs: circulating endothelial cells; CES-D: Center for Epidemiological Studies-Depression; CT: cardiovascular training; CI: confidence interval; CLASI: cutaneous lupus erythematosus disease area and severity index; CRP: C-reactive protein; DAS28: Disease Activity Score-28; DASH: Disabilities of the Arm, Shoulder and Hand; DHA: docosahexaenoic acid; dsDNA: double-stranded DNA; DU: digital ulcers; ECLAM: European Consensus Lupus Activity Measurement; EPA: eicosapentaenoic acid; EPCs: endothelial progenitor cells; ER admission: emergency room admission; ES: effect size; ESR: erythrocyte sedimentation rate; ESWT: extracorporeal shock wave therapy; FACIT: Functional Assessment of Chronic Illness Therapy; FISI: Fecal Incontinence Severity Index; FMD: flow-mediated dilation; FSS: Fatigue Severity Scale; GFR: glomerular filtration rate; GH: general health; GHQ: General Health Questionnaire; GI: gingival index; GIT score: gastrointestinal tract score; HADS: Hospital Anxiety and Depression Scale; HAMIS: Hand Mobility in

Scleroderma; HAQ: Health Assessment Questionnaire; HAQ-DI: HAQ-Disability Index; HDL: high-density lipoprotein; HeiQ: Health Education Impact Questionnaire; Hg: mercury; HOMA IR: Homeostatic Model Assessment for Insulin Resistance; HR: hazard ratio; HR: heart rate; HRQoL: health-related quality of life; hsCRP: high sensitivity C-reactive protein; IFN: interferon; Ig: immunoglobulin; IID: interincisal distance; IL: interleukin; IPL: intense pulsed light; IQR: interquartile range; IRR: incidence rate ratio; ITT: intention-to-treat; LDI: laser Doppler imaging: LDL: low-density lipoprotein; LE: lupus erythematosus; Lstren: lip strength; MN: minimal needling; MASRI: Medication Adherence Self-Report Inventory; MCID: minimal clinically important difference; METS: metabolic equivalent of task; MH: mental health; MHAQ: Modified Health Assessment Questionnaire; MHISS: Mouth Handicap in Systemic Sclerosis;MI-RSWB: Multidimensional Inventory of Religious/Spiritual Well-Being; MMO: maximal mouth opening; MPO: Myeloperoxidase; MPR: medication possession ratio; mRSS: modified Rodnan Skin Score; MSI: Mental Synthetic Index: MUFA: monounsaturated fatty acids; MxA: myxovirus protein A; Ns: not significant; OCT: optical coherence tomography; P: intervention/management strategy for the population under investigation; PCS: mental component summary; PDL: pulsed-dye laser: PETCO2: end-tidal carbon dioxide pressure; PF: physical functioning; PGA: Physician Global Assessment; PH: physical health; PHP: Patient Hygiene Performance; PROMIS: Patient-Reported Outcomes Measurement Information System; PSI: Physical Synthetic Index; PSQ: Perceived Severity of Stress Questionnaire; PSQI: Pittsburgh Sleep Quality Index; PSS: Perceived Stress Scale; PtGA: Patient Global Assessment; PUFA: polyunsaturated fatty acids; PUVA: psoralen and ultraviolet A; PWC75%/kg: physical working capacity measured at 75% of the predicted maximal heart rate; RCP: respiratory compensation point; RCT: randomised clinical trial; RNP: ribonucleoprotein; ROM: range of motion; RP: role physical; RR: relative risk; RSE: Rosenberg Self-Esteem Scale; RT: resistance training; SDI: SLICC/ACR Damage Index; SE scale: Chronic Disease Self-Efficacy Scale; SEF: second self-efficacy for performing functions; SEOS: Self-Efficacy for controlling Other Symptoms; SEP: Self-Efficacy Perception for controlling pain; SF-36: short-form 36; SF-MPQ: Short-Form McGill Pain Questionnaire; SFA: saturated fatty acids; SFAQ: Scleroderma Functional Assessment Questionnaire; SGRQ: St. George's Respiratory Questionnaire; SIBID: Situational Inventory of Body Image Dysphoria; sICAM: soluble intracellular cellular adhesion molecule; SLAM: Systemic Lupus Activity Measure; SLAQ: Systemic Lupus Activity Questionnaire; SLE: systemic lupus erythematosus; SLEDAI: Systemic Lupus Erythematosus Disease Activity Index; Sm: Smith; SM: Social media; SMILEY: Simple Measure of the Impact of Lupus Erythematosus in Youngsters; SMS: Symptom-monitoring Support; SSc: systemic sclerosis; SSGLSS: Scleroderma Support Group Leader Self-efficacy Scale; Std: standard; sTNFR: soluble tumour necrosis factor receptor; taVNS: Transcutaneous auricular vagus nerve stimulation; TCM: traditional Chinese medicine; TE: expiratory time; TG: triglycerides; TI: inspiratory time; TLR: toll-like receptor; TNF: tumour necrosis factor; TOT: total respiratory time; Tprot: tongue protrusion; Tstren: tongue strength; TUG: Timed Up and Go; UC: usual care; UCLA GIT: University of California Los Angeles Scleroderma Clinical Trials Consortium Gastrointestinal Tract; UVA1: ultraviolet A1; VAS: visual analogue scale; VAT: ventilatory anaerobic threshold; VE/VCO2: ventilatory equivalent for carbon dioxide; VLDL: very low-density lipoprotein; VO2 max: maximal oxygen consumption; VT: tidal volume; VT: vitality; W: week; WHOQOL: World Health Organization Quality of Life Instrument.

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Supplemental Table S3

RESEARCH QUESTION 4: WHICH INSTRUMENTS HAVE BEEN USED TO ASSESS THE OUTCOME OF NON-PHARMACOLOGICAL MANAGEMENT?

RESEARCH QUESTION 5: WHEN SHOULD THE OUTCOME OF NON-PHARMACOLOGICAL MANAGEMENT BE ASSESSED?

Intervention/management strategy	Comparator	N	Outcome measures	Assessment timepoints	SD&OA*	Reference
SLE						
Physical exercise and physical activity						
P: Phase I: supervised aerobic exercise at 70-80% of maximum heart rate. Phase II: continue exercise in the supervised setting for 1 month/ unsupervised home exercise programme for 6 months. C: Range of montion/muscle strengthening	Other SLE patients	Intervention: 5 Control: 5	Exercise treadmill: maximum exercise capacity (METS) Bone mineral density Biomarkers: PTH, osteocalcin SLAM FSS SF-36 PF Maximum muscle strength (isokinetic exercise machine, CYBEX) SF-36	Baseline, 2 months, 6 months	11; W	Ramsey-Goldman, 2000 [1]
P: Exercise group= exercise (walking, cycling, and swimming) Relaxation group= listen to a relaxation audiotape in a darkened, warm, and quiet room C: Relaxation group: listen to relaxation audiotape	Other SLE patients	Intervention: 62 Control: 32	HAD SLAM Clinical global impression change score FSS Chalder Fatigue Scale (CFS) VAS fatigue SF-36 PSQI Test duration, max O2 uptake, max ventilation, max HR, recovery HR.	Baseline, 12 weeks	11; I	Tench, 2003 [2]
P: Supervised aerobic exercise: incremental load on a treadmill C: Usual care	Other SLE patients	Intervention: 41 Control: 19	Physiologic variables HAQ SF-36 BDI VAS for pain VAS for fatigue	Baseline, 12 weeks	10; I	Carvalho, 2005 [3]

Intervention/management strategy	Comparator	N	Outcome measures	Assessment timepoints	SD&OA*	Reference
P: Supervised aerobic exercise: walking on a treadmill for a 3-month programme C: N/A: intraindividual assessment	N/A; intraindividual assessment	Intervention: 6 Control: -	SLEDAI Modified HAQ SF-36 VT and BP Aerobic capacity (VO2 max)	Every week for 3 weeks before starting the exercise programme, 4, 8, and 12 weeks during the exercise programme - 3 months after the exercise program had ended (follow up).	10; R	Clarke-Jenssen, 2005 [4]
P: Cardiorespiratory exercise test carried out on a treadmill C: No	Healthy controls	Intervention: 20 Control: 20	Tidal volume (VT) breathing frequency (BF) total respiratory time (TOT) inspiratory time (TI) expiratory time (TE) inspiratory time to total time (TI/TOT) mean inspiratory flow (VT/TI) ventilatory equivalent for carbon dioxide (VE/VCO2) and end-tidal carbon dioxide pressure (PETCO2)	Immediate results	1; R	do Prado, 2011 [5]
P: Program of increasing exercise from 100 to 300 min/week (combined with reduced-calorie diet) C: N/A: intraindividual assessment	N/A; intraindividual assessment	Intervention: 15 Control: -	BMI Waist circumference Self-reported physical activity	Baseline, 16 weeks	10; W	Otto, 2011 [6]
P: Home exercise program using WII Fit interactive video game for 10 weeks C: N/A: intraindividual assessment	N/A; intraindividual assessment	Intervention: 15 Control: -	Body weigh Waist circumference HADS FSS Short-form of the McGill Pain Questionnaire (SF-MPQ) at week 10 Pittsburgh Sleep Quality Index (PSQI)	Baseline, 10 weeks	10; R	Yuen, 2011 [7]
P: Supervised training sessions: 35–40 minutes of resistance, 30 minutes of treadmill aerobic training, and 5 minutes of stretching exercises. C: Usual care	Other SLE patients	Intervention: 14 Control: 10	Chronotropic reserve (CR); Heart rate recovery (absolute change) at the first minute after exercise (HRR1) at the second minute after exercise (HRR2).	Baseline,12 weeks	11; W	Miossi, 2012 [8]
P: Ergospirometric test C: No	Healthy controls	Intervention: 27 Control: 30	Cardiopulmonary exercise test IL-6, IL-10 and TNF-a	Immediate results	10; I	da Silva, 2013 [9]
P: Supervised walking at a heart rate corresponding to the VT1 threshold. C: Usual care	Other SLE patients	Intervention: 18 Control: 20	SLEDAI Flow-mediated dilation (FMD) Cardiopulmonary exercise test	Baseline, 16 weeks	10; R	dos Reis-Neto, 2013 [10]

Intervention/management strategy	Comparator	N	Outcome measures	Assessment timepoints	SD&OA*	Reference
P: Walking, running, cycling, or use of an elliptical machine. C: No	Other SLE patients, healthy controls	Intervention: 14 Control: 12	SLAQ CRP, IL-12, ICAM-1 and TNF-α Flow-mediated dilation (FMD).	Immediate results	1; I	Barnes, 2014 [11]
P: Treadmill walking C: No	Healthy controls	Intervention: 8 Control: 10	Cardiopulmonary exercise test Weight, BMI SLEDAI FSS IFN-gamma, IL-10, IL-6, TNF-alfa, sTNFR1, and sTNFR2 CRP C3 and C4 SF-36	Baseline, 12 weeks	10; I	Perandini, 2014 [12]
P: Seven strength exercises for the major muscle groups followed by aerobic exercise on a treadmill. C: Usual care	Other SLE patients, healthy controls	Intervention: 17 Control: 16	Total cholesterol, HDLc, LDLc, VLDLc, triglycerides. Composition of the HDL subfractions	Baseline,12 weeks	11; W	Benatti, 2015 [13]
P: Aerobic training on a bicycle ergometer, for 6 weeks. C: N/A: intraindividual assessment	N/A; intraindividual assessment	Intervention: 30 Control: 30	Beck depression inventory (BDI) Fatigue Severity Scale (FSS) SF-36	Baseline, 6 weeks	11; W	Bogdanovic, 2015 [14]
P: Two single bouts of acute aerobic exercise (moderate and intense) performed in a treadmill C: No	Other SLE patients, healthy controls	Intervention: 23 Control: 10	INF-γ, IL-10, IL-6, TNF-α and soluble TNF receptors (sTNFR1 and sTNFR2)	Immediate results	10; I	Perandini, 2015 [15]
P: Walking and bicycle vs free weight and elastic bands exercises 3 times/week for 12 weeks C: Usual care	Other SLE patients	Intervention: 21 Control: 21	BDI SLEDAI SF-36 12-minute walk test	Baseline, 12 weeks	11; I	Abrahao, 2016 [16]
P: Endurance exercises (walking or bicycle) + strengthening exercises (with elastoband or weights for both upper and lower limbs) C: Usual care	Other SLE patients	Intervention: 15 Control: 18	FSS Physical working capacity (measured at 75% of the predicted maximal heart rate PWC75%/kg) Modified Borg's scale to assess perception of exertion.	Baseline, 3 months, 9 months	11; W	Avaux, 2016 [17]

Intervention/management strategy	Comparator	N	Outcome measures	Assessment timepoints	SD&OA*	Reference
P: 0 to 3 months: high + low-moderate intensity aerobic exercise + education+ individual coaching. 4 to 12 months: high + low-moderate intensity aerobic exercise + individual coaching C: Usual care	Other SLE patients	Intervention: 18 Control: 17	Maximal oxygen uptake (VO2 max) SLEDAI SF-36 SDI Self-reported question for physical activity	Baseline, 3 months, 6-month,12 months	11; I	Bostrom, 2016 [18]
P: Single bout of acute aerobic exercise performed 72 hours after a cardiopulmonary exercise test to determine VAT and RCP C: No	Other SLE patients, healthy controls	Intervention: 8 Control: 4	Quantitative PCR array assay of a panel of immune-related genes (altered if fold changes of >2)	At baseline, at end of exercise, after three hours of recovery	10; I	Perandini, 2016 [19]
P: Various modalities: aerobic exercise programme, resistance training, multi-component interventions. C: N/A	N/A	6 RCTs and 5 quasi-RCTs	Aerobic capacity BDI HADS SLEDAI FSS	Dissimilar tome points. Span: 6–52 weeks	12; R	O'Dwyer, 2017 [20]
P: Aerobic exercise (treadmill, walking/cycling/swimming) C: N/A	N/A	3 studies: 2 RCT, 1 quasi-experimental	FSS SF-36 VT VAS fatigue	8/12 weeks	12; R	Wu, 2017 [21]
P: Supervised treadmill aerobic training C: No	Other SLE patients	Intervention: 9 Control: 10	Cardiopulmonary exercise test Body weight Fat, lean mass 24-h dietary recalls Fasting glucose and insulin levels Matsuda index + insulinogenic index phospho-AMPK Thr 172 assessed through muscle biopsy and western blot	Baseline, 12 weeks	11; W	Benatti, 2018 [22]

Intervention/management strategy	Comparator	N	Outcome measures	Assessment timepoints	SD&OA*	Reference
P: Hatha yoga classes (deep breathing, relaxation, meditation, poses for strength, flexibility, and balance) + encouragement to home practice for 8 weeks C: N/A: intraindividual assessment	N/A; intraindividual assessment	Intervention: 7 Control: -	Personal Journals Interviews	Baseline, 8 weeks	9; W	Middleton, 2018 [23]
P: Aerobic exercise on a treadmill C: Guidelines about healthy lifestyle	Other SLE patients	Intervention: 26 Control: 32	High-sensitivity hsCRP, TFN-alfa, IL-6 Oxidative stress markers (MPO) Bruce test Arterial stiffness - pulse wave velocity (PWV)	Baseline, 12 weeks	10; I	Soriano-Maldonado, 2018 [24]
P: Kinesiotherapy protocol for 4 months C: Usual care	Other SLE patients	Intervention: 5 Control: 9	BMI and skin folds, Body circumferences Percentage of body fat SF-36 Cytokine levels: TNF-a, IL-2, IL-5, IL-6, IL-8, IL-10 (ELISA) CD11b+ and CXCR2+ neutrophils and lymphocytes Flexibility tests 10 maximal repetitions test (10 RM) Tinetti gait and balance evaluation test	Baseline, 4 months	10; R	Timoteo, 2018 [25]
P: Aerobic exercise C: N/A	N/A	2 RCTs	SF-36	3/12 months	12; R	da Hora, 2019 [26]
P: Walk With Ease (WWE) programme C: Did not complete intervention	Other SLE patients	Intervention: 48 Control: 27	FACIT-Fatigue VAS fatigue VAS pain Satisfaction survey	Baseline,6 weeks	10; I	Sheikh, 2019 [27]
P: Wearing of pedometer + face-to-face physical activity counselling + follow up phone calls C: Usual care	Other SLE patients	Intervention: 38 Control: 38	FSS SF-36 Pittsburgh Sleep Quality Index (PSQI) Daily steps	Baseline, 8 weeks,12 weeks	11; I	Wu, 2019 [28]
P: Moderate to vigorous intensity aerobic exercise C: Physical activity guidelines and basic nutritional information	Other SLE patients	Intervention: 26 Control: 32	Bruce submaximal treadmill protocol Beck depression inventory Multidimensional fatigue inventory SF-36 Perceived stress scale PSQI	Baseline, 12 weeks	10; I	Gavilan-Carrera, 2020 [29]

Intervention/management strategy	Comparator	N	Outcome measures	Assessment timepoints	SD&OA*	Reference
P: Strengthening and stretching upper limb exercises C: Four sessions of training in alternative methods of performing daily activities, use of aids, joint protection and energy conservation	Other SLE patients	Intervention: 31 Control: 27	Disability of arm, shoulder and hand (DASH) HAQ LupusQoL Grip and pinch strength Purdue test	6, 12 and 24 weeks	11; W	Keramiotou, 2020 [30]
P: Whole body vibration exercises (WBVE) C: Whole body vibration exercise	Healthy controls	Intervention: 18 Control: 9	sEMG of GM (gastrocnemius medialis), VL (Vastus lateralis), TA(tibialis anterior) muscles	Baseline, 1 month	11; I	Dionello, 2021 [31]
P: Home-based moderate-intensity aerobic exercise and resistance training. C: Usual care	Other SLE patients	Intervention: 12 Control: 11	Fitness Index (FI) in 2 km walking test at week 12, Go/no-go test, Stroop task	Baseline, 12 weeks	10; I	Kao, 2021 [32]
P: Whole body vibration exercises (WBVE) C: Isometry training programme	Other SLE patients	Intervention: 11 Control: 10	FACIT-F Timed up and go (TUG) HAQ SF-36	Baseline, 6 weeks, 12. weeks	11; W	Lopes-Souza, 2021 [33]
P: No intervention. Exposure: sedentary behaviour, as per one item from the Rapid Assessment of Physical Activity (RAPA). C: Self-reported physical activity	Other SLE patients	Intervention: 41 Control: 184	Adjusted Risk of Incident Depression (Incident depression= a change in PHQ-8 score from less than 10 at baseline to greater than or equal to 10 during follow-up) SLEDAI SDI Rapid assessment of physical activity (RAPA)	Baseline, up to 36 months	5; R	Patterson, 2021 [34]
Patient education and self-management						
P: Attend a self-management course C: Usual care	Other SLE patients	Intervention: 21 Control: 20	Multidimensional Assessment of Fatigue BDI VAS scale for pain 7 items devised by Arthritis Foundation 10 items devised by Arthritis Foundation	Baseline, 6 weeks	10; I	Sohng, 2003 [35]
P: Educational programme C: Educational programme	SSc patients	Intervention: 5 with SSc, 5 with SLE Control: N/A	Results of interview	Immediate results (interview study)	9; R	Brown, 2004 [36]

Intervention/management strategy	Comparator	N	Outcome measures	Assessment timepoints	SD&OA*	Reference
P: Attend a psychoeducational group combining functional strategy training and psychosocial support (MINDFULL program) C: N/A: intraindividual assessment	N/A; intraindividual assessment	Intervention: 17 Control: -	BDI Metamemory in Adulthood Questionnaire (MIA) Memory Functioning Questionnaire (MFQ) SDI	Baseline, 8 weeks	10; I	Harrison, 2005 [37]
P: Take part in a patient education program C: N/A: intraindividual assessment	N/A; intraindividual assessment	Intervention: 13 Control: -	SF-36 VAS for Pain VAS for fatigue VAS for physical well-being Patient satisfaction questionnaire	Baseline, 3 months	9; R	Miljeteig, 2009 [38]
P: Attend the Chronic Disease Self-Management Program (CDSMP) C: N/A: intraindividual assessment	N/A; intraindividual assessment	Intervention: 45 Control: -	SF-36 Self-efficacy for Managing Chronic Disease Scale Cognitive Symptom Management Scale Exercise Behavior Scale three-item Communication with Physicians Scale Self-reported Medication-taking Scale Grady Health Electronic Records.	Baseline, 4 months	10; I	Drenkard, 2012 [39]
P: Education regarding SLE and its management including lifestyle modifications C: Usual care	Other SLE patients	Intervention: 21 Control: 20	Modified Morisky Scale (MMS) Knowledge assessment questionnaire	Baseline, 1 month, 2 months	11; W	Ganachari, 2012 [40]
P: Standardised daily cellular text message reminders (CTMR) for HCQ intake as prescribed + printed information sheet C: Usual care	Other SLE patients	Intervention: 19 Control: 22	Medication Adherence Self-Report Inventory (MASRI) whole-blood levels of HCQ pharmacy refill adherence Percentage of clinic visits occurred “on time” SLEDAI	Baseline, at follow up visits (about every 2–4 months) for 14 months	11; W	Ting, 2012 [41]
P: Take part in BLESS (Balancing Lupus Experience with Stress Strategies) study C: Usual care	Other SLE patients	Intervention: 15 Control: 15	Medical Outcomes Study (MOS) health distress scale Arthritis Self-Efficacy Scale BDI LUP-QOL State-Trait Anxiety Inventory (STAI)	Baseline, 4 months	11; W	Williams, 2014 [42]

Intervention/management strategy	Comparator	N	Outcome measures	Assessment timepoints	SD&OA*	Reference
P: 0 to 3 months: high + low-moderate intensity aerobic exercise + education+ individual coaching. 4 to 12 months: high + low-moderate intensity aerobic exercise + individual coaching C: Usual care	Other SLE patients	Intervention: 18 Control: 17	Maximal oxygen uptake (VO2 max) SLEDAI SF-36 SDI Self-reported question for physical activity	Baseline, 3 months, 6-month,12 months	11; I	Bostrom, 2016 [18]
P: 3 phases targeted nursing C: Regular specific nursing	Other SLE patients	Intervention: 58 Control: 58	Likert scaling method SLEDAI SDI SF-36	Baseline, 20 months	11; W	Zhang, 2016 [43]
P: Take part in FAME (Fatigue and Activity Management Education) = 1 h group education / 1 h individual goal C: N/A: intraindividual assessment	N/A; intraindividual assessment	Intervention: 21 Control: -	FSS FAI SEPECSA HADS-A HADS-D LupusQoL	Baseline, 6 weeks, 8 weeks	10; I	O'Riordan, 2017 [44]
P: 3-year CVD prevention counselling program C: N/A: intraindividual assessment	N/A; intraindividual assessment	Intervention: 121 Control: -	Blood pressure Blood glucose Cholesterol profile BMI	Baseline, 3 years	10; I	Yelnik, 2017 [45]
P: Session of mentoring C: N/A: intraindividual assessment	N/A; intraindividual assessment	Intervention: 36 Control: -	Self-care agency scale Self-rated abilities on the health practices scale Lupus quality inventory	Weekly	10; I	Kusnanto, 2018 [46]
P: Follow a web-based educational program + answer module questions on an online social media forum with other participants C: Usual care	Other SLE patients	Intervention:13 Control: 14	MPR (medication possession ratio) MASRI (medication adherence self-report inventory) PSQ CASE (children arthritis self-efficacy scale) SMILEY (erythematosus in youngsters) index 3 Likert scale questions 22-item scale Validated Likert scale	Baseline, 3 months	11; W	Scalzi, 2018 [47]

Intervention/management strategy	Comparator	N	Outcome measures	Assessment timepoints	SD&OA*	Reference
P: Receive education and support by a peer-to-peer mentoring C: N/A: intraindividual assessment	N/A; intraindividual assessment	Intervention: 23 Control: -	SF-36 PHQ-9 GAD-7 PSS Patient activation measure Systemic Lupus Activity Questionnaire	Baseline, 6 weeks, 12 weeks	10; I	Williams, 2018 [48]
P: To be enrolled in the Peer Approaches to Lupus Self-management (PALS) program C: N/A: intraindividual assessment	N/A; intraindividual assessment	Intervention: 20 Control: -	PHQ-8 GAD-8 score SLAQ Th1/Th2 cytokine balance LUP-QOL Patient Activation Measure	Baseline, 6 weeks, 12 weeks	10; I	Williams, 2019 [49]
P: Use of SimpleMed+ pillbox to organise and administer medication + receiving digital reminders during 2° month C: Usual care	Other SLE patients	Intervention: 8 Control: 11	Report from SimpleMed+ pillbox: pill count MASRI	Baseline, 3 months	11; W	Harry, 2020 [50]
P: Web-based education programme (3 months) followed by telephone counselling by physicians (3 months) C: Usual care	Other SLE patients	Intervention: 40 Control: 40	FSS Self-Efficacy for Managing Chronic Disease 6-Item Scale	Baseline, Month 6	11; W	Kankaya, 2020 [51]
P: App for self-tracking lifestyle activities and symptoms, and weekly telehealth coaching sessions C: Usual care	Other SLE patients	Intervention: 25 Control: 22	Number of days with at least 1 login FACIT-Fatigue LupusQoL BPI-SF	Baseline, 16 weeks	11; W	Khan, 2020 [52]
P: PainTRAINER: 8 weeks, automated, internet-based version of pain coping skills training programme C: Usual care	Other SLE patients	Intervention: 30 Control: 30	Coping strategies questionnaire PROMIS-29 LupusPRO PROMIS pain interference instrument	Baseline, 9 weeks	11; W	Allen, 2021 [53]
P: Follow the Chronic Disease Self-Management Program (CDSMP) C: Usual care	Other SLE patients	Intervention: 24 Control: -	Chew Health Literacy Scale Lupus Self-Efficacy Scale Patient activation measure (PAM) SLAQ	Baseline, 6 weeks, 12 weeks	11; W	White, 2021 [54]
Psychological interventions						

Intervention/management strategy	Comparator	N	Outcome measures	Assessment timepoints	SD&OA*	Reference
P: Enrolled in a Brief Supportive–Expressive Group Psychotherapy + "booster sessions" for 3 months C: Usual care	Other SLE patients	Intervention: 64 Control: 64	SCL-90-R (Symptom Checklist 90-Revised) SF-36 SLAM-R SDI HAQ (Stanford Health Assessment Questionnaire)	Baseline, 12 weeks, and post intervention (6 after and 12 months follow-up)	11; I	Dobkin, 2002 [55]
P: Enrolled in a Brief Supportive–Expressive Group Psychotherapy + "booster sessions" for 3 months C: Usual care	Other SLE patients	Intervention: 58 Control: 66	SCL90-R SLEDAI SLAM-R SDI Illness Intrusiveness Ratings Scale (IIRS)	Baseline, 12 weeks, and post intervention (6 after and 12 months follow-up)	11; W	Edworthy, 2003 [56]
P: Receive biofeedback-assisted cognitive behavioural treatment (BF/CBT) C: Usual care	Other SLE patients	Intervention: 32 Control: 27+33	AIMS2-Pain MPI-I CES-D Arthritis Self-Efficacy Scale PSS (Perceived Stress Scale) SF-36 SLAM-R SLEDAI	Baseline, 3 months, 9 months	11; I	Greco, 2004 [57]
P: Discussion between educator, patient, and partner, after a regular visit for medical care + telephone follow up C: 45-minute video presentation about lupus, and monthly telephone calls	Other SLE patients	Intervention: 64 Control: 58	SF-36 SLAQ Profile of mood states (POMS) Self-efficacy–scale modified social support scale developed for arthritis patients 8-item subscale of the Medical Interview Satisfaction Scale	Baseline, 6 months, 12 months	11; W	Karlson, 2004 [58]
P: Application of the Cognitive-Behaviour Therapy based on the Chronic Illness Self-Management Course C: Usual care	Other SLE patients	Intervention: 11 Control: 22	SF-36 HADS CES-D (Centre for epidemiological Studies-Depression scale) CDS (Cognitive Distortion Scale) Fatigue Intensity scale Illness Perceptions Questionnaire revised (IPQ-R) Perceived Stress Scale (PSS)	Baseline, weekly and post intervention (2 weeks, 4 months, 12 months)	10; I	Goodman, 2005 [59]
P: Group session focused on psychoeducative and psychotherapeutic elements C: Same intervention 6 months later (waiting group)	Other SLE patients	Intervention: 26 Control: 8	SCL-90-R (Symptom Checklist 90-Revised) SF-36 HADS-D KKG (control convictions relating to illness and health) Freiburg questionnaire on coping with illness (FKV) Self-acceptance registration scale (SESA) Everyday life questionnaire (FAL)	Baseline, 3 months, 6 months, 12 months	10; I	Haupt, 2005 [60]

Intervention/management strategy	Comparator	N	Outcome measures	Assessment timepoints	SD&OA*	Reference
P: Enrolled in a psychosocial group program organized by Community Rehabilitation Network C: Usual care	Other SLE patients	Intervention: 56 Control: 20	General Health Questionnaire (GHQ-30) Rosenberg Self-Esteem Scale (RSE)	Baseline, 6 weeks	10; R	Ng, 2007 [61]
P: Attend 10 Cognitive-Behaviour Therapy sessions C: General recommendations about health lifestyle	Other SLE patients	Intervention: 21 Control: 24	SF-36 SLEDAI Stress Vulnerability Inventory Perception of stress (SRLE) BDI STAI-T	Baseline, 3-9-15 months	11; W	Navarrete-Navarrete, 2010 [62]
P: Attend 10 Cognitive-Behaviour Therapy sessions C: General recommendations about health lifestyle	Other SLE patients	Intervention: 18 Control: 16	Cohen Perceived Stress Questionnaire Perceived Stress Scale (SRLE) SF-36 State–Trait Anxiety Inventory (STAI) Beck Depression Inventory (BDI)	Baseline, 3-9-15 months	11; W	Navarrete-Navarrete, 2010 [63]
P: Follow three separate CBT modules preinstalled on a CD ROM C: Educational sessions usual care	Other SLE patients	Intervention: 27 Control: 10 +16	McGill Pain Questionnaire – Short Form (SF-MPQ) Behaviour Assessment System for Children (BASC) Self-Perception Profile for Adolescents (SPPA) Multidimensional Health Locus of Control Scales (MHLC) PedsQL SLEDAI Perceived Social Support-Family (PSS-Fa) Perceived Social Support-Friend (PSS-Fr) The Coping Strategies Questionnaire (CSQ)	Baseline, 6 weeks, and post intervention (3-6 months)	11; W	Brown, 2012 [64]
P: Cognitive-Behaviour Therapy sessions, supportive therapy, multiple psychological interventions, psychoeducational intervention. C: N/A	N/A	6 RCTs	Self-rating anxiety scale (SAS) HAMA STAI-T BDI CES-D Self-rating depression scale (SDS) HAMD SLEDAI SLAM SLAQ FSS SF-36 Cohen's perceived stress scale (STRESS) Revised Hasstes scale	6/12 months post intervention	12; R	Zhang, 2012 [65]

Intervention/management strategy	Comparator	N	Outcome measures	Assessment timepoints	SD&OA*	Reference
P: Follow a modified BI-CBT 8 step program + Skin care education + appearance enhancement workshop C: Usual care	Other SLE patients	Intervention: 10 Control: 5	Body image in Lupus Scale (BILS) Multidimensional Body Self-Relations Centre for Epidemiological Studies- Depression (CES-D), STAI LupusPRO SELENA-SLEDAI SDI	Baseline, 7 months	10; I	Jolly, 2014 [66]
P: Cognitive-Behaviour Therapy sessions, psychoeducational intervention, expressive group psychotherapy. C: N/A	N/A	6 RCTs	BDI SLEDAI FSS SF-36 SF-36 AIMS2-Pain VAS pain	Baseline, 6 weeks – 15 months	12; R	Liang, 2014 [67]
P: Follow the "Better Choice, Better Health" Chronic Disease Self-Management Program (CDSMP) C: Usual care	Other SLE patients	Intervention: 15 Control: 15	STAI DHEA and cortisol levels in saliva sample Arthritis Self- Efficacy Scale pain MOS BDI LUP-QOL	Baseline, 6 weeks and post intervention (4 months)	11; W	Williams, 2014 [68]
P: Participate in a mindfulness group protocol C: N/A: intraindividual assessment	N/A; intraindividual assessment	Intervention: 6 Control: -	Qualitative	N/A	4; W	Horesh, 2017 [69]
P: Attend a mindfulness-based cognitive therapy C: General recommendations about health lifestyle	Other SLE patients	Intervention: 23 Control: 23	GHQ-28 SF-36	Baseline, 8 weeks, and post intervention (6 months)	11; I	Solati, 2017 [70]
P: Brief group psychoanalytic psychotherapy: 90 min session once a week for 20 weeks. C: Usual care	Other SLE patients	Intervention: 43 Control: 37	HADS Coping Strategies Inventory (CSI) SLE Specific Symptom Checklist SLEDAI SLEQOL	Baseline, 20 weeks	11; I	Conceição, 2019 [71]
P: Attend 10 Cognitive-Behaviour Therapy sessions C: N/A	N/A	2 studies: 2 RCTs	SF-36	15 months	12; R	da Hora, 2019 [26]
P: Attend a mindfulness-based cognitive therapy + homework C: N/A: intraindividual assessment	N/A; intraindividual assessment	Intervention: 25 Control: -	Korean version of Beck Depression Inventory-II (BDI-II) Beck Anxiety Inventory (BAI) Satisfaction with Life Scale (SWLS) Perceived Stress Scale (PSS)	Baseline, 6 weeks, and post intervention (1 month, 2 months)	10; I	Kim, 2019 [72]

Intervention/management strategy	Comparator	N	Outcome measures	Assessment timepoints	SD&OA*	Reference
P: Eight Sessions of Acceptance and Commitment Therapy (ACT) C: Usual care	Other SLE patients	Intervention: 12 Control: 12	Beck's Hopelessness Scale Kessler's Psychological Distress Inventory Krupp's Psychasthenia Inventory	Baseline, 2 months	10; I	Sahebari, 2019 [73]
P: Receive psychoeducational interventions C: Health education, and nontargeted psychological comfort	Other SLE patients	Intervention: 42 Control: 43	WHOQOL-BREF BDI STAI	1 week, 3 months, 6 months	11; W	Xu, 2021 [74]
Dietary therapy and nutrition						
P: NCEP Step 2 diet: 30% or less calories from fat (7% from saturated fat, 13% from monounsaturated fat, and 10% from polyunsaturated fat), and < 200 mg of cholesterol per day + maintain their usual level of physical activity. C: Usual care	Other SLE patients	Intervention: 8 Control: 8	Body weight 7-day activity recall QOL (VAS) Blood levels of VLDL, HDL, LDL, TG. 3-day food record for food intake	Baseline, 6 weeks,12 weeks	11; W	Shah, 2002 [75]
P: No intervention. Dietary nutrients estimated by a semiquantitative food frequency questionnaire C: No	Other SLE patients	Intervention: 7 Control: 189	Lupus Activity Criteria Count SDI	4 years	5; R	Minami, 2003 [76]
P: 1° group: 3g MaxEPA+ 3mg copper 2° group: 3g MaxEPA + placebo copper 3° group: 3 mg copper+ placebo oil fish C: Placebo	Other SLE patients	Intervention: 40 Control: 12	BMI SLAM-R Patient-reported improvement	Baseline, 6, 12, and 24 weeks	11; W	Duffy, 2004 [77]

Intervention/management strategy	Comparator	N	Outcome measures	Assessment timepoints	SD&OA*	Reference
P: Counselled to follow the NCEP Step II diet: < 30% of energy as fat and < 7% as saturated fat, and < 200 mg of cholesterol per day 21. Counselled to limit their intake of sodium (< 2400 mg/day) and refined and added sugars and consume 2–3 servings of skim/low fat dairy foods and ≥ 5 servings of fruits and vegetables per day. C: Usual care	Other SLE patients	Intervention: 8 Control: 7	3-day food record at baseline, 6, 12 weeks Changes in nutrient intakes	Baseline, 6 weeks, 12 weeks	11; W	Shah, 2004 [78]
P: Assessing daily use of micronutrient supplements (MS) in SLE patients: Calcium, Vitamin D, Multivitamins (vitamin B6, folic acid, minerals iron, B12, C, E, magnesium, potassium). C: No	Other SLE patients	Intervention: 137 Control: 122	SLAM- R SLEDAI 2K Use of healthcare resources (visit to healthcare professionals, use of diagnostic tests, hospital emergency visits) SF-36 SDI	N/A	1; I	Aghdassi, 2010 [79]
P: No intervention. Dietary nutrients estimated by a semiquantitative food frequency questionnaire (Vitamin B6, Vitamin B12, folate, total dietary fibre, soluble dietary fibre, insoluble dietary fibre). C: No	Other SLE patients	Intervention: 216 Control: -	Food frequency questionnaire (FFQ) Lupus Activity Criteria Count	Baseline (1995), 5 years (2000)	5; R	Minami, 2011 [80]
P: Reduced calorie diet (1200/1500 kcal/d) [combined with increasing exercise from 100 to 300 min/w] C: N/A: intraindividual assessment	N/A; intraindividual assessment	Intervention: 15 Control: -	BMI Waist circumference Self-reported physical activity	Baseline, 16 weeks	10; W	Otto, 2011 [6]

Intervention/management strategy	Comparator	N	Outcome measures	Assessment timepoints	SD&OA*	Reference
P: Low GI diet whereby carbohydrate intake was limited to 45 g per day of low GI food, without restricting the consumption of fat and protein C: Low calorie diet	Other SLE patients	Intervention: 11 Control: 12	Weight, BMI Waist circumference BILAG ECLAM SLEDAI Fatigue Severity Scale PSQI	Baseline, 6 weeks	11; W	Davies, 2012 [81]
P: No intervention. Administration of food frequency questionnaire (FFQ) + study of fatty acid content and plaque occurrence C: No	Other SLE patients	Intervention: 114 Control: 122	Food frequency questionnaire (FFQ) SLAM SLEDAI Intima-media thickness (IMT) Occurrence of plaque SDI	Immediate results	1; I	Elkan, 2012 [82]
P: With each meal, each patient received 1 capsule for 3 months, containing 500 mg turmeric (22.1 mg was the active ingredient curcumin) C: Placebo	Other SLE patients	Intervention: 12 Control:12	Haematuria Proteinuria Systolic blood pressure C3, C4, anti-dsDNA	3 months	11; I	Khajehdehi, 2012 [83]
P: CVD-PCP counselling program= Phase 1: assessment of CVD risk factor on patients Phase 2: education on cardiovascular diseases and discussion on prevention strategies. Followed by a patient-centred nutrition counselling to attend at least once a month C: Usual care	Other SLE patients	Intervention: 41 Control: 30	Weight, BMI Waist circumference Changes in nutrient intake	Baseline, 6 months	10; I	Everett, 2015 [84]
P: 1000 mg of green tea extract C: Placebo	Other SLE patients	Intervention: 32 Control: 36	SLEDAI SF-36	Baseline, 12 weeks	11; I	Shamekhi, 2017 [85]

Intervention/management strategy	Comparator	N	Outcome measures	Assessment timepoints	SD&OA*	Reference
P: Health coaching (weekly calls to educate and implement changes based on data analysis) C: Usual care	Other SLE patients	Intervention: 20 Control: 20	FACIT-Fatigue Brief Pain Inventory-Short form LupusQoL	Baseline, 4 weeks, 8 weeks, 12 weeks, 16 weeks	11; W	Rothman, 2018 [86]
P: No intervention. Good adherence (>10 points) to Med Diet (14-item questionnaire on food consumption frequency and habits) C: No	Other SLE patients	Intervention: 143 Control: 16	BMI, fat percentage Lipid profile Ankle-brachial index, BP Comorbidities: T2DM, AHT, dyslipidaemia. hsCRP Homocysteine SLEDAI Anti-dsDNA, C3, C4 SDI	N/A	1; R	Pocovi-Gerardino, 2021 [87]
Complementary and alternative medicine						
P: Administration of Traditional Chinese Medicine (cicimifuga rhizome 9g + oldenlandia herb 18 h, southernwood 15 g, red peony root 12 g + moutan bark 12 g+ rehmannia root 15 g+ turtle shell 12g etc) C: Usual care (Western medicine)	Other SLE patients	Intervention: 85 Control: 85	Serum lipids and lipoproteins (TC, TG, HDL-C, LDL-C, VLDL-C, ApoA)	Baseline, 2 years	11; W	Wen, 2007 [88]
P: Acupuncture (modified Feng 1985 protocol) C: Minimal needling, usual care	Other SLE patients	Intervention: 103 Control: 89	FSS SF-36 VT AIMS2-Pain MPI SF-36 BP SLEDAI SLAM-R PGA SDI IL-1b, IL-6	Baseline, 5 weeks	11; I	Greco, 2008 [89]
P: Being CAT (complementary and alternative therapies) users C: No	Other SLE patients	Intervention: Control:	SF-36 SDI	N/A	1; R	Alvarez-Nemegyei, 2009 [90]
P: Traditional Chinese Medicine: Dan-Chi-Liu-Wei combination (granules) C: Usual care + 10% Traditional Chinese medicine	Other SLE patients	Intervention: Control:	SLEDAI-based SLEDAI anti-dsDNA, C3, C3	Baseline, 3 months, 6 months	11; I	Liao, 2011 [91]

Intervention/management strategy	Comparator	N	Outcome measures	Assessment timepoints	SD&OA*	Reference
P: Zi Shen Qing (combination of 6 herbs) C: Hydroxychloroquine 100 mg/12h PO	Other SLE patients	Intervention: 42 Control: 42	SLEDAI-2K Chinese Medicine Syndromes (CMSs) Prednisone dose C3, C4, anti-dsDNA, IgG, sIL-2R, NK-cell activity	Baseline, 12 weeks	11; I	Linda, 2013 [92]
Photoprotection						
P: 3 different sunscreens: Sunscreen A: UVB: Octocrylene. UVA: Mexoryl SX, Mexoryl XL, Parsol 1789. TiO2), SPF >60 Sunscreen B: (UVB: Eusolex 6300, Parsol MCX, Uvinul T150, Neohelipan. UVA: Parsol 1789. TiO2), SPF >75 Sunscreen C: (Eusolex 6300, Parsol MCX, Uvinul T150 UVA: Parsol 1789. TiO2) SPF= 35] C: N/A: intraindividual assessment	N/A; intraindividual assessment	Intervention: 11 Control: -	Photoprovocation test Skin biopsies after treatment Semiquantitative RT-PCR for ICAM-1 mRNA expression	Up to 4 weeks after irradiation	10; R	Stege, 2000 [93]
P: 2 mg/cm2 sunscreen Anthelios W30 La Roche- Posay (parsol 1789, uvinul N539, uvinul T150, mexoryl XL, titanium dioxide) C: N/A: intraindividual assessment	N/A; intraindividual assessment	Intervention: 66 Control: -	Photoprovocation test Photosensitivity, skin lesions	Days 2, 3, and 4 and 1, 2, and 3 weeks	5; W	Herzinger, 2004 [94]
P: 9-week course of low-dose UVA1 phototherapy C: N/A: intraindividual assessment	N/A; intraindividual assessment	Intervention: 9 Control: -	SLEDAI Subjective clinical scoring Subjective clinical scoring Serum levels of IFN-gamma, IL-4 T- cell populations,	Baseline, 9 weeks	10; I	Szegedi, 2005 [95]

Intervention/management strategy	Comparator	N	Outcome measures	Assessment timepoints	SD&OA*	Reference
P: Broad-spectrum liposomal sunscreen 20 min prior to a combined standardized UVA/UVB irradiation C: Unprotected skin, sunscreen use	Healthy controls, intraindividual assessment	Intervention: 20 Control: 10	Immunohistological analysis for immune cell subpopulations.	Baseline, 24 h, 72 h	10; I	Zahn, 2014 [96]
P: Photoprotection awareness C: No	Other SLE patients	Intervention: 205 Control: 17	SLEDAI-2K SDI Anti-dsDNA, ANA, Ro, La, ENA C3, C4 ESR	N/A	1; I	Abdul Kadir, 2018 [97]
Healthcare models						
P: Analysis (coding) of active patient-physician communication from audiotaped routine visits C: N/A: intraindividual assessment	N/A; intraindividual assessment	Intervention: 79 Control: -	SLEDAI HAQ SDI	Baseline, after a median of 4.7 years	10; I	Ward, 2003 [98]
P: Application of the continuous care model (CCM) [Orientation, sensitization, control] C: N/A: intraindividual assessment	N/A; intraindividual assessment	Intervention: 34 Control: -	Knowledge questionnaires at baseline SF-36	Baseline, 3 months	10; I	Sahebalzamani, 2017 [99]
P: Transitional care plan (structural assessments and corresponding interventions based on the Omaha System) + telephone follow up 2, 3, 6, and 10 weeks after discharge C: Usual care	Other SLE patients	Intervention: 64 Control: 61	SLEDAI-2K SF-36 Exercise Self-Care Agency scale (ESCA) N° readmissions 30, 60, and 90 days	Baseline, 3 months	11; I	Xie, 2018 [100]
P: Multidisciplinary care (from a physician, pharmacist, and nurse) in addition to routine clinical follow up C: Usual care	Other SLE patients	Intervention: 42 Control: 40	SLEDAI-2K SIMS (Satisfaction with Information about Medicines Scale) EQ-5D-3L questionnaire for health status CQR (Compliance Questionnaire of Rheumatology) BMQ (Beliefs about Medicines Questionnaire) SDI	Baseline, 12 months	11; W	Zhang, 2019 [101]

Intervention/management strategy	Comparator	N	Outcome measures	Assessment timepoints	SD&OA*	Reference
Laser treatment						
P: Treatment with pulsed dye laser (PDL) on discoid lesions C: N/A: intraindividual assessment	N/A; intraindividual assessment	Intervention: 12 Control: -	Pain VAS scale Cutaneous Lupus Erythematosus Disease Area and Severity Index (CLASI) Cosmetic VAS scale	N/A	10; R	Erceg, 2009 [102]
P: Treatment with pulsed dye laser (PDL) on discoid lesions C: N/A: intraindividual assessment	N/A; intraindividual assessment	Intervention: 9 Control: -	Erythema index (EI) and Texture index (from mCLASI)	Baseline, week 4, week 8, week 12, week 16, week 24	10; I	Rerknimitr, 2019 [103]
Social support						
P: Attend support group C: No	Other SLE patients	Intervention: 34 Control: 71	SF-36 (PCS and MCS) SLAM	N/A	1; R	Dorsey, 2004 [104]
P: No intervention (exposure to illness uncertainty, social support, coping modes through questionnaires)- being hospitalized for over a week C: N/A: intraindividual assessment	N/A; intraindividual assessment	Intervention: 200 Control: -	Mishel Uncertainty in Illness Scale (MUIS) Social Support Rating Scale (SSRS) Medical Coping Modes Questionnaires (MCMQ)	N/A	1; R	Li, 2019 [105]
Others						
P: Meditation instruction + meditation practice C: Usual care	Other SLE patients	Intervention: 15 Control: 15	SF- 36 Normetanephrine levels Heart rate variability	Baseline, 24 weeks	10; I	Bantornwan, 2014 [106]
P: Completing a Home Cleaning and Maintenance Product list (HCMPL) questionnaire C: No	Other SLE patients	Intervention: 80 Control: 41	SRF (Self-reported flare) risk	N/A	2; I	Squance, 2015 [107]
P: No intervention. Self-reported smoking status (smoker: one cigarette per day for three consecutive months) C: No	Other SLE patients	Intervention: 65 Control: 665	SLEDAI (score and domains) Autoantibodies (dsDNA, anti-Smith, anti-SSA/Ro, anti-SSB/La, anti-ribonucleoprotein (RNP) and anti-ribosomal RNP, APL	Immediate results	1; R	Xu, 2015 [108]

Intervention/management strategy	Comparator	N	Outcome measures	Assessment timepoints	SD&OA*	Reference
P: 1° group= warm shower / 2° group= warm footbath with adding of 2 cups of Epsom salt C: Warm shower	Other SLE patients	Intervention: 60 Control: 30	FSS	Baseline, day 3, day 5, day 7	10; R	Abdelaziz, 2020 [109]
P: Training of the patient on how to use the cosmetic camouflage. Letting the patient use camouflage based on personal needs. C: Usual care	Other SLE patients	Intervention: 28 Control: 15	Hospital Anxiety and Depression Scale (HADS) SLEDAI-2K SDI SLEQoL Rosenberg self-esteem scale DLQI (Dermatology Life Quality Index)	Baseline, 12 weeks, 21 weeks	11; W	Oliveira, 2020 [110]
P: Transcutaneous auricular vagus nerve stimulation (taVNS) C: Sham-stimulation	Other SLE patients	Intervention: 12 Control: 6	VAS scale for pain FACIT-F PtGA and PGA Tender and swollen joint counts Serum level of: IFNα, IL-1, IL-8, IL-10, and tumour necrosis factor (TNF)	Baseline, day 5, day 12	11; I	Aranow, 2021 [111]
SSc						
Physical exercise and physical activity						
P: Mouth stretching exercise and oral augmentation exercise C: N/A: intraindividual assessment	N/A; intraindividual assessment	Intervention: 10 selected among 35 patients with MMO≤30mm Control: N/A	Maximal Mouth opening (MMO)	Baseline, 18 weeks	10; R	Pizzo, 2003 [112]
P: Paraffin bath and hand exercises C: N/A: intraindividual assessment	N/A; intraindividual assessment	Intervention: 17 Control: N/A	Hand function Skin lesions (skin sclerosis) Pain	Baseline, end of intervention at 1 month	10; I	Sandqvist, 2004 [113]
P: Self-administrated stretching C: No intervention	Healthy controls	Intervention: 45 Control: 21 healthy controls	Range of movement (ROM) HAQ	Baseline, 1 month, 1 year	10; I	Mugii, 2006 [114]
P: Individualised rehabilitation program followed by at-home exercise C: Usual care	Other SSc patients	Intervention: 16 Control: 17	HAQ DI Short form -36(SF-36) St George's Respiratory Questionnaire (SGRQ) HAMIS	Baseline, 4 months	10; R	Antonioli, 2009 [115]

Intervention/management strategy	Comparator	N	Outcome measures	Assessment timepoints	SD&OA*	Reference
P: Connective tissue massage, Mc Mennell joint manipulation and home exercise C: Home exercise programme alone	Other SSc patients	Intervention: 20 Control: 20	Fist closure Hand Mobility in Scleroderma (HAMIS) Cochin hand functional disability scale (CHFS) SF-36	Baseline, 9 weeks	11; I	Bongi, 2009 [116]
P: Tailored rehabilitation program with manual therapy and exercise C: Educational advice and information about SSc	Other SSc patients	Intervention: 10 Control: 10	global health hand and face conditions:	Baseline, 9 weeks (end of intervention), 18 weeks	11; W	Maddali Bongi, 2009 [117]
P: Aerobic exercise programme C: Aerobic exercise programme	Healthy controls	Intervention: 7 Control: 7	VO2max	Baseline, 8 weeks	10; I	Oliveira, 2009 [118]
P: Combined connective tissue massage, Kabat´s technique, kinesitherapy and home mimic exercise program C: Home exercise programme alone	Other SSc patients	Intervention: 20 Control: 20	Mouth Opening HAQ SF-36	Baseline, end of treatment (9 weeks), 9 weeks post treatment follow up	11; I	Maddali Bongi, 2011 [119]
P: Supervised, treadmill, treadmill (aerobic), stretching exercise C: N/A: intraindividual assessment	N/A; intraindividual assessment	Intervention: 11 Control: N/A	Strength & muscle function assessment Anaerobic threshold Respiratory compensation point Peak exercise	Baseline, week 12	10; R	Pinto, 2011 [120]
P: Multi-faceted oral health intervention C: Usual care	Other SSc patients	Intervention: 26 Control: 22	Löe-Silness gingival index (GI)	Baseline, 3 months, 6 months	11; W	Yuen, 2011 [121]
P: Orofacial exercise + multifaceted oral health intervention C: Usual care	Other SSc patients	Intervention: 26 Control: 22	Oral aperture	Baseline, 3 months, 6 months	11; I	Yuen, 2012 [122]
P: Stretching and mobility exercises at home using a newly developed telemedicine system C: Home kinesiotherapy protocol	SSc patients and RA-patients	Intervention: 20 (10 with RA) Control: 20 (10 with RA)	Dreiser's index (functional index of hand) HAMIS HAQ	Baseline, after 6w and 12w	11; W	Piga, 2014 [123]

Intervention/management strategy	Comparator	N	Outcome measures	Assessment timepoints	SD&OA*	Reference
P: Muscle strength C: No intervention	Healthy controls	Intervention: 20 Control: 20	Isometric dynamometry Surface electromyography Bioelectrical impedance analysis Pulmonary function testing Six-minute walking distance (6MWD) SF-36 HAQ-DI	Immediate results	1; R	Lima, 2015 [124]
P: Hand stretching exercise and weekly phone call with occupational therapist, with specific timetable for when to conduct exercise C: Hand stretching exercise and weekly phone call with occupational therapist	Other SSc patients	Intervention: 15 Control: 16	COPM	Baseline, 1 month and 3 months (end of intervention)	11; I	Stefanantoni, 2016 [125]
P: Hand stretching & hip exercise, ergotherapy, thermal & mud bath, whirlpool therapy, soft tissue massage of the hands and joints C: Same as intervention, but excluding treatment of the hands.	Other SSc patients	Intervention: 31 Control: 22	HAQ DASH HAI CHFT VAS pain	Baseline, 3 weeks (end of intervention), 6 months	10; R	Horváth, 2017 [126]
P: Personalized physical therapy session with physiotherapist and occupational therapist C: Usual care	Other SSc patients	Intervention: 110 Control: 108	HAQ	Baseline, 12 months	11; R	Rannou, 2017 [127]
P: Exercise habits C: No intervention	Other SSc patients	Intervention: 389 Control: 363	HAQ-DI PROMIS-29	Immediate results	5; I	Azar, 2018 [128]
P: Manual therapy and physiotherapy, three weeks every year for three years C: N/A: intraindividual assessment	N/A; intraindividual assessment	Intervention: 43 Control: N/A	HAQ DI	Baseline, once a year for three years	10; R	Brignoli, 2018 [129]

Intervention/management strategy	Comparator	N	Outcome measures	Assessment timepoints	SD&OA*	Reference
P: Intervention 1: HIIT (cycling) twice a week for 12 weeks Intervention 2: HIIT (arm cranking) twice a week for 12 weeks C: No training protocol	Other SSc patients	Intervention 1: 11 Intervention 2: 11 Control: 12	CVC ΔTcpO2 VO2max 6MWT EQ-5D-5 L	Baseline, 12 weeks	11; W	Mitropoulos, 2018 [130]
P: Thermal modalities, tissue mobilisation, and upper extremity exercises with occupational therapist C: N/A: intraindividual assessment	N/A; intraindividual assessment	Intervention: 21 Control: N/A	QuickDASH PROMIS	Baseline, 4 weeks, 8 weeks (= end of intervention)	10; R	Murphy, 2018 [131]
P: Paraffin bath and hand exercises C: Hand exercises without wax bath	Other SSc patients	Intervention: 17 Control: 19	HAMIS	Baseline, end of intervention (9 weeks), 8-week follow-up	11; I	Gregory, 2019 [132]
P: Paraffin bath and hand exercises C: Water bath, hand exercise	Other SSc patients	Intervention: 43 Control: 43	HAMIS	Baseline, post intervention at 6 month and 12-month follow-up	11; I	Kristensen, 2019 [133]
P: Home based self-management programme that consisted of a booklet and information about SSc C: N/A: intraindividual assessment	N/A; intraindividual assessment	Intervention: 22 Control: N/A	VAS (pain) CHFS	Baseline, 4 weeks and end of intervention (8 weeks)	10; R	Landim, 2019 [134]
P: Combined programme with HIIT and resistance training, twice weekly for 12 weeks C: No intervention	Other SSc patients	Intervention: 16 Control: 16	CVC ΔTcpO2 VO2max	Baseline, 3 months, 6 months	11; W	Mitropoulos, 2019 [135]
P: Tai Chi C: Home exercise	Other SSc patients	Intervention: 14 Control: 14	Trunk lateral test Berg balance scale Pittsburgh sleep quality test	Baseline, 10 weeks	11; W	Cetin, 2020 [136]

Intervention/management strategy	Comparator	N	Outcome measures	Assessment timepoints	SD&OA*	Reference
P: Home-based aerobic exercise (stationary bike), muscular endurance training (upper limbs) and stretching (hands) C: Usual care	Other SSc patients	Intervention: 22 Control: 22	6MWT Quadriceps- and biceps strength Hand grip	Baseline, 6 months	11; I	Filippetti, 2020 [137]
P: Self-management programme composed of a booklet C: No intervention	Other SSc patients	Intervention: 40 Control: 17	Difference in finger-to-palm distance (ΔFTP) grip, tip and key pinch strength CHFS Scleroderma Health Assessment Questionnaire (SHAQ)	Baseline, 24 weeks	10; I	Landim, 2020 [138]
P: Orofacial exercise programme followed by oral hygiene care advice C: Oral hygiene care advice followed by orofacial exercise programme	Other SSc patients	Intervention: 28 Control: 28	MMO	Baseline, one month, two months	11; I	Cüzdan, 2021 [139]
P: High-intensity interval exercise (HIIT) C: N/A: intraindividual assessment	N/A; intraindividual assessment	Intervention: 11 Control: N/A	Functional ability Respiratory muscle strength SSc-specific HAQ-DI	Baseline, 12 weeks	10; I	Defi, 2021 [140]
P: Booklet, isometric hand exercise and self-administrated stretching C: Booklet alone	Other SSc patients	Intervention: 32 Control: 30	HAMIS Duruoz Hand Index (DHI) HAQ-DI Handgrip strength SF-36 mRSS	Baseline, 4 weeks	11; I	Gokcen, 2021 [141]
P: Home exercises for temporomandibular joint, mimic, masticatory and cervical spine muscles C: Home exercises and combined physiotherapeutic procedures performed by a physiotherapist	Other SSc patients	Intervention: 25 Control: 22	Mouth Handicap in Systemic Sclerosis Questionnaire (MHISS) Helkimo anamnestic and dysfunction index Skin score	Skin score, MHISS, Helkimo anamnestic and dysfunction index at end of treatment, T1 (after 12w), and post treatment follow up of 8w, T2 and comparison of differences of effect between intervention & control at T1	11; W	Maddali Bongi, 2021 [142]
P: Intensive occupational therapy and app-delivered home exercise. C: App alone	Other SSc patients	Intervention: 16 Control: 16	QuickDASH hand disability PROMIS	QuickDASH hand disability at 8w and 18w	11; W	Murphy, 2021 [143]

Intervention/management strategy	Comparator	N	Outcome measures	Assessment timepoints	SD&OA*	Reference
Patient education and self-management						
P: Educational programme C: N/A: intraindividual assessment	N/A; intraindividual assessment	Intervention: 6 Control: N/A	Self-efficacy pain subscale (SEP) Self-efficacy function subscale (SEF) Self-efficacy other symptoms subscale (SEOS)	Baseline 10 weeks (end of intervention) 22 weeks	10; I	Samuelson, 2000 [144]
P: Educational programme C: Educational programme	SLE-patients	Intervention: 5 with SSc, 5 with SLE Control: N/A	Results of interview	Immediate results (interview study)	9; R	Brown, 2004 [36]
P: Multidisciplinary disease management programme C: N/A: intraindividual assessment	N/A; intraindividual assessment	Intervention: 41 Control: N/A	ANOVAs for cognition and depression	Baseline, 6 weeks post intervention and 6 months post intervention	10; R	Kwakkenbos, 2011 [145]
P: Mail-delivered self-management programme C: N/A: intraindividual assessment	N/A; intraindividual assessment	Intervention: 62 (49 completers, 13 non-completers) Control: N/A	Self-efficacy, domain pain Fatigue scale CES-D HAQ Swindon foot and ankle questionnaire (SFAQ)	Baseline, end of treatment (3-4 months)	10; I	Poole, 2013 [146]
P: Self-management website with 10 modules C: N/A: intraindividual assessment	N/A; intraindividual assessment	Intervention: 16 Control: N/A	Health Education Impact Questionnaire (heiQ) Self-Efficacy (SE) scale Patient Activation Measure (PAM) Center for Epidemiologic Studies Depression Scale (CES-D) VAS (Fatigue)	Baseline, 12 weeks	10; R	Poole, 2014 [147]
P: Informative meeting followed by occupational therapy C: Informative meeting alone	Other SSc patients	Intervention: 10 Control: 10	HAQ	Baseline, 24 weeks	10; R	Zanatta, 2017 [148]
P: Self-management website C: Book	Other SSc patients	Intervention: 134 Control: 133	PROMIS EQ5D	Baseline, 16 weeks	11; W	Khanna, 2019 [149]
P: Home based self-management programme that consisted of a booklet and information about SSc C: N/A: intraindividual assessment	N/A; intraindividual assessment	Intervention: 22 Control: N/A	VAS (pain) CHFS	Baseline, 4 weeks and end of intervention (8 weeks)	10; R	Landim, 2019 [134]

Intervention/management strategy	Comparator	N	Outcome measures	Assessment timepoints	SD&OA*	Reference
P: Scleroderma Support group Leader Education (SPIN-SSLED) programme C: N/A: intraindividual assessment	N/A; intraindividual assessment	Intervention: 10 Control: N/A	Scleroderma Support Group Leader Self-Efficacy Scale (SSGLSS)	Baseline, 3 months	10; R	Thombs, 2019 [150]
P: Face-to-face training + standard information programme (i.e., brochures, DVD) C: Educational materials alone	Other SSc patients	Intervention: 31 Control: 32	Mouth Opening	Baseline, 12 months	11; I	Uras, 2019 [151]
P: Self-management programme composed of a booklet C: No intervention	Other SSc patients	Intervention: 40 Control: 17	Difference in finger-to-palm distance (ΔFTP) grip, tip and key pinch strength CHFS Scleroderma Health Assessment Questionnaire (SHAQ)	Baseline, 24 weeks	10; I	Landim, 2020 [138]
P: Videoconference-based group intervention that provided education and practice with mental health coping strategies C: No intervention	Other SSc patients	Intervention: 86 Control: 86	PROMIS Anxiety 4a version 1.0	Baseline, 4 weeks	11; I	Thombs, 2021 [152]
Bathing and thermal modalities						
P: Paraffin bath and hand exercises C: N/A: intraindividual assessment	N/A; intraindividual assessment	Intervention: 17 Control: N/A	Hand function Skin lesions (skin sclerosis) Pain	Baseline, end of intervention at 1 month	10; I	Sandqvist, 2004 [113]
P: Hand stretching & hip exercise, ergotherapy, thermal & mud bath, whirlpool therapy, soft tissue massage of the hands and joints C: Same as intervention, but excluding treatment of the hands.	Other SSc patients	Intervention: 31 Control: 22	HAQ DASH HAI CHFT VAS pain	Baseline, 3 weeks (end of intervention), 6 months	10; R	Horváth, 2017 [126]

Intervention/management strategy	Comparator	N	Outcome measures	Assessment timepoints	SD&OA*	Reference
P: Thermal modalities, tissue mobilisation, and upper extremity exercises with occupational therapist C: N/A: intraindividual assessment	N/A; intraindividual assessment	Intervention: 21 Control: N/A	QuickDASH PROMIS	Baseline, 4 weeks, 8 weeks (= end of intervention)	10; R	Murphy, 2018 [131]
P: Taohong Siwu Decoction (TSD) + oral Prednisone (10mg daily) C: Placebo + oral prednisone	Other SSc patients	Intervention: 71 Control: 71	Modified Rodnan Skin Score (MRSS)	Baseline, 2 weeks, 14 weeks.	11; I	Zhou, 2018 [153]
P: Paraffin bath and hand exercises C: Hand exercises without wax bath	Other SSc patients	Intervention: 17 Control: 19	HAMIS	Baseline, end of intervention (9 weeks), 8-week follow-up	11; I	Gregory, 2019 [132]
P: Paraffin bath and hand exercises C: Water bath, hand exercise	Other SSc patients	Intervention: 43 Control: 43	HAMIS	Baseline, post intervention at 6 month and 12-month follow-up	11; I	Kristensen, 2019 [133]
P: Intervention 1 (I1): Hand immersion in Bastian CO_2 bath. Intervention 2 (I2): Hand immersion in hot water C: Hand immersion in Bastian CO_2 bath	Other SSc patients and healthy controls	Intervention: 12 in each intervention group Control: 12	Resistance index (RI)	0, 5, 10 and 20min after hand bath	11; I	Lange, 2019 [154]
P: Ozone bath, 2 series of 10 days per series with 10 days apart C: N/A: intraindividual assessment	N/A; intraindividual assessment	Intervention: 42 Control: N/A	IL-2sR neopterin	Baseline, 40 days (10 days after last treatment)	10; I	Nowicka, 2019 [155]
Complementary and alternative medicine						
P: Active phase of study: Transcutaneous Electrical Nerve Stimulation (TENS) Prolonged study phase: Patients trained to use TENS on a specific acupoints at home C: Active phase of study only	Healthy controls	Intervention: 17 Control: 9	HRV GI symtoms questionnaires SF-36	Baseline, day 0 (after one session), 2 weeks (after home programme)	10; W	Sallam, 2007 [156]

Intervention/management strategy	Comparator	N	Outcome measures	Assessment timepoints	SD&OA*	Reference
P: Deep oscillation, Biofeedback C: No intervention	Other SSc patients	Intervention: Do: 10 Biof: 8 Control: 10	Scleroderma-VAS for Raynaud´s phenomenon	Baseline, 4 weeks	11; W	Sporbeck, 2012 [157]
P: TENS C: N/A: intraindividual assessment	N/A; intraindividual assessment	Intervention: 17 Control: N/A	GMA HRV GI-dysmotility questionnaire mRSS MSS VIP IL-6	Baseline, day 0 (after one session), 2 weeks (after home programme)	10; I	McNearney, 2013 [158]
P: Biofeedback training C: Biofeedback training	Patients with functional faecal incontinence	Intervention: 13 Control: 26	Fecal incontinence severity index (FISI) VAS (quality of life)	Baseline, 6 weeks (after intervention) and 6 months.	2; R	Collins, 2016 [159]
P: Taohong Siwu Decoction (TSD) + oral Prednisone C: Placebo + oral prednisone	Other SSc patients	Intervention: 71 Control: 71	Modified Rodnan Skin Score (MRSS)	Baseline, 2 weeks, 14 weeks.	11; I	Zhou, 2018 [153]
P: Received Ciplukan herb (Physalis angulata Linn) 250mg C: Placebo	Other SSc patients	Intervention: 29 Control: 30	MRSS B-cell activating factor (BAFF) Soluble CD40-ligand (sCD40L) procollagen-1 N-terminal peptide (P1NP)	Baseline, 4 weeks, 8 weeks, 12 weeks.	11; I	Dewi, 2019 [160]
P: Tai Chi C: Home exercise	Other SSc patients	Intervention: 14 Control: 14	Trunk lateral test Berg balance scale Pittsburgh sleep quality test	Baseline, 10 weeks	11; W	Cetin, 2020 [136]
P: Holoil (contained Neem oil and Hypericum perforatum) C: Usual care	Other SSc patients	Intervention: 21 Control: 20	Infection Debridement Skin ulcer changes	Baseline, every two weeks until end of treatment/resolution (up to and above 96 days)	2; I	Giuggioli, 2020 [161]
Manual therapy						
P: Connective tissue massage, Mc Mennell joint manipulation and home exercise C: Home exercise programme alone	Other SSc patients	Intervention: 20 Control: 20	Fist closure Hand Mobility in Scleroderma (HAMIS) Cochin hand functional disability scale (CHFS) SF-36	Baseline, 9 weeks	11; I	Bongi, 2009 [116]
P: Tailored rehabilitation program with manual therapy and exercise C: Educational advice and information about SSc	Other SSc patients	Intervention: 10 Control: 10	global health hand and face conditions:	Baseline, 9 weeks (end of intervention), 18 weeks	11; W	Maddali Bongi, 2009 [117]
P: Manual lymph drainage (MDL) C: No intervention	Other SSc patients	Intervention: 20 Control: 15	HAMIS HAQ SF-36	Baseline, 5 weeks (end of treatment), 14 weeks.	11; R	Bongi, 2011 [162]

Intervention/management strategy	Comparator	N	Outcome measures	Assessment timepoints	SD&OA*	Reference
P: Combined connective tissue massage, Kabat´s technique, kinesitherapy and home mimic exercise program C: Home exercise programme alone	Other SSc patients	Intervention: 20 Control: 20	Mouth Opening HAQ SF-36	Baseline, end of treatment (9 weeks), 9 weeks post treatment follow up	11; I	Maddali Bongi, 2011 [119]
P: Daily home programme (warm gloves, Thai massage, stretching) C: Same programme without gloves	Other SSc patients	Intervention: 14 Control: 14	HAMIS	Baseline, 2 weeks	11; W	Vannajak, 2014 [163]
P: Osteopathic manipulative treatment C: N/A: intraindividual assessment	N/A; intraindividual assessment	Intervention: 6 Control: N/A	Hand stiffness ROM of fingers Distal upper limbs skin score CHFS HAQ-DI VAS (pain) SF-36	Hand stiffness, ROM of fingers, distal upper limbs skin score, disease symptoms, functional status at baseline, 9 weeks (post intervention), 13 weeks.	4; I	O'Connor, 2016 [164]
P: Hand stretching & hip exercise, ergotherapy, thermal & mud bath, whirlpool therapy, soft tissue massage of the hands and joints C: Same as intervention, but excluding treatment of the hands.	Other SSc patients	Intervention: 31 Control: 22	HAQ DASH HAI CHFT VAS pain	Baseline, 3 weeks (end of intervention), 6 months	10; R	Horváth, 2017 [126]
P: Manual therapy and physiotherapy, three weeks every year for three years C: N/A: intraindividual assessment	N/A; intraindividual assessment	Intervention: 43 Control: N/A	HAQ DI	Baseline, once a year for three years	10; R	Brignoli, 2018 [129]
Dietary therapy and nutrition						
P: Probiotics C: N/A: intraindividual assessment	N/A; intraindividual assessment	Intervention: 10 Control: N/A	GIT score reflux bloating/distention	Baseline, 2 months	10; I	Frech, 2011 [165]
P: Individually adapted nutritional intervention C: N/A: intraindividual assessment	N/A; intraindividual assessment	Intervention: 9 Control: N/A	Weight Food intake Nutritional biochemical parameters SF-36	Baseline, 4 months, 8 months & 12 months	10; I	Ortiz-Santamaria, 2014 [166]

Intervention/management strategy	Comparator	N	Outcome measures	Assessment timepoints	SD&OA*	Reference
P: Medical nutrition therapy C: N/A: intraindividual assessment	N/A; intraindividual assessment	Intervention: 18 Control: N/A	Abridged Scored Patient-Generated Subjective Global Assessment (abPGSGA) Body composition Sarcopenic classification by DXA Nutritional score	Baseline, 18 months	10; I	Doerfler, 2017 [167]
P: Probiotics C: Placebo	Other SSc patients	Intervention: 19 Control: 21	GIT Reflux score	Baseline, 60 days, 120 days	11; I	Low, 2019 [168]
P: Probiotics C: Placebo	Other SSc patients	Intervention: 37 Control: 36	UCLA GIT 2.0 Th1, Th2, Th17, Treg cells	Baseline, 8 weeks	11; W	Marighela, 2019 [169]
P: Faecal microbiota transplantation C: Placebo	Other SSc patients	Intervention: 5 Control: 4	ULCA GIT 2.0	Baseline, week 4, week 16	11; I	Fretheim, 2020 [170]
Phototherapy and laser treatment						
P: Infrared A (IRA) C: N/A: intraindividual assessment	N/A; intraindividual assessment	Intervention: 58 Control: N/A	Response to cold-challenge (tau-value) VAS (Raynaud's phenomenon) MRSS DAS28	Baseline, after 1, 5 and 10 IRA treatments, 1-week post-intervention, 3 weeks post-intervention and 6 weeks post intervention (11-week time frame in total)	10; I	Foerster, 2005 [171]
P: Intense pulsed light (IPL) C: N/A: intraindividual assessment	N/A; intraindividual assessment	Intervention: 20 Control: N/A	Photographic appearance Laser doppler imaging (LDI) Thermography	Baseline, 1, 6 and 12 months after therapy.	10; R	Murray, 2012 [172]
P: Pulsed dye laser & intense pulsed light (PDL & IPL) C: N/A: intraindividual assessment	N/A; intraindividual assessment	Intervention: 19 Control: N/A	LDI Clinical photography Dermoscopy Hospital Anxiety and Depression Scale (HADS) Adapted Satisfaction with Appearance Scale (ASWAP)	Baseline, week 4, 8, 16 (=8 weeks after final treatment) Nine months.	10; I	Dinsdale, 2014 [173]
P: Pulsed dye laser (PDL) C: N/A: intraindividual assessment	N/A; intraindividual assessment	Intervention: 23 Control: N/A	VAS tolerance VAS satisfaction	Effect of treatment at end of treatment (until lesion cleared) and 6 months post-intervention follow-up	4; I	Burillo-Martinez, 2017 [174]
P: Intense pulsed light (IPL) C: N/A: intraindividual assessment	N/A; intraindividual assessment	Intervention: 15 Control: 5	oral opening inter-ridge distance inter-incisal distance	Baseline, after 3 treatments, after 7 treatments, 3-month follow-up 6-month follow-up	10; I	Rosholm Comstedt, 2017 [175]
P: Low level light therapy (IR + red + blue) C: N/A: intraindividual assessment	N/A; intraindividual assessment	Intervention: 8 Control: N/A	VAS ulcer assessment LDI Patient opinion on treatment	Baseline, 1 week, 2 weeks, 3 weeks (=end of treatment), 4 weeks, 8 weeks.	10; R	Hughes, 2019 [176]
Shockwave therapy						

Intervention/management strategy	Comparator	N	Outcome measures	Assessment timepoints	SD&OA*	Reference
P: ESWT with pressure pulses C: N/A: intraindividual assessment	N/A; intraindividual assessment	Intervention: 30 Control: N/A	RSS VAS (Skin wellness) Skin thickness Endothelial progenitor cells (EPCs) Circulating endothelial cells (CECs) von Willebrand factor (vWF) Vascular endothelial growth factor (VEGF) sICAM-1 sMCP-1	Baseline, after 1st sitting, 7 days, 30 days, 60 days, 90 days.	10; I	Tinazzi, 2011 [177]
P: ESWT C: N/A: intraindividual assessment	N/A; intraindividual assessment	Intervention: 8 Control: N/A	vWF VEGF RSS VAS;	Baseline, 1 week, 4 weeks	10; I	Belloli, 2013 [178]
P: ESWT for digital ulcers in SSc C: Usual care	Other SSc patients	Intervention: 9 Control: 14	Skin sclerosis Skin thickening No. of digital ulcers (DUs)	Baseline, 4 weeks, 8 weeks	10; I	Saito, 2016 [179]
P: ESWT for digital ulcers in SSc C: N/A: intraindividual assessment	N/A; intraindividual assessment	Intervention: 9 Control: N/A	No. of DUs Size of DUs HAQ EQ5D VAS (pain) PainVision readout	Baseline, 9 weeks, 15 weeks, 20 weeks.	10; I	Saito, 2016 [180]
Healthcare models						
P: Customized intervention for dental hygiene and upper extremity's function C: N/A: intraindividual assessment	N/A; intraindividual assessment	Intervention: 17 Control: N/A	Patient hygiene performance index (PHP) Dental measures Button time Pegboard time Keitel functional index (KFI)	Baseline, 6 months, 12 months	10; I	Poole, 2010 [181]
P: Multidisciplinary disease management programme C: N/A: intraindividual assessment	N/A; intraindividual assessment	Intervention: 41 Control: N/A	ANOVAs for cognition and depression	Baseline, 6 weeks post intervention and 6 months post intervention	10; R	Kwakkenbos, 2011 [145]
P: Multidisciplinary team care C: Usual care	Other SSc patients	Intervention: 28 Control: 25	Grip strength MMO 6MWD HAQ	Baseline, 12 weeks, 24 weeks	11; I	Schouffoer, 2011 [182]
Hyperbaric oxygen or ozone therapy						
P: Hyperbaric oxygen therapy C: N/A: intraindividual assessment	N/A; intraindividual assessment	Intervention: 6 Control: N/A	No. of session to achieve healing Degree of healing No. of amputations	Until ulcer resolution	4; I	Mirasoglu, 2017 [183]
P: Oxygen-ozone therapy C: Usual care	Other SSc patients	Intervention: 25 Control: 25	Grading of DU healing Expression of VEGF Expression of endothelin-1 type A receptor (ETAR)	Baseline, 20 days (= end of intervention)	11; W	Hassanien, 2018 [184]

Intervention/management strategy	Comparator	N	Outcome measures	Assessment timepoints	SD&OA*	Reference
P: Ozone bath, 2 series of 10 days per series with 10 days apart C: N/A: intraindividual assessment	N/A; intraindividual assessment	Intervention: 42 Control: N/A	IL-2sR neopterin	Baseline, 40 days (10 days after last treatment)	10; I	Nowicka, 2019 [155]
Oral hygiene						
P: Customized intervention for dental hygiene and upper extremity's function C: N/A: intraindividual assessment	N/A; intraindividual assessment	Intervention: 17 Control: N/A	Patient hygiene performance index (PHP) Dental measures Button time Pegboard time Keitel functional index (KFI)	Baseline, 6 months, 12 months	10; I	Poole, 2010 [181]
P: Multi-faceted oral health intervention C: Usual care	Other SSc patients	Intervention: 26 Control: 22	Löe-Silness gingival index (GI)	Baseline, 3 months, 6 months	11; W	Yuen, 2011 [121]
P: Xylitol chewing gum C: Xylitol mouth rinse	Other SSc patients	Intervention: 6 Control: 7	Changes in levels of Mutans Streptococci (MS)	MS changes from baseline, directly after intervention (10 minutes) and 25mins after intervention	11; I	Yuen, 2012 [185]
Others						
P: Autologous fat transplantation, two times three months apart C: N/A: intraindividual assessment	N/A; intraindividual assessment	Intervention: 10 Control: N/A	MHISS MMO VAS satisfaction	Baseline and 1 week, 1 month, and 1 year after intervention	4; I	Onesti, 2016 [186]
P: Neuromuscular taping C: N/A: intraindividual assessment	N/A; intraindividual assessment	Intervention: 53 Control: N/A	Functional score to assess hand mobility & functionality	Baseline, immediately after treatment, 1 month, 3 months, and 6 months	10; I	Parisi, 2017 [187]
P: Animal-assisted intervention session with multidisiplinary team, weekly for 20 weeks C: C1: alternative social activity (cooking) C2: No intervention	Other SSc patients	Intervention: 14 Control: C1: 14 C2: 14	VAS STAI-S STAI-T Toronto Alexythymia Scale	Baseline and weekly 20 weeks	10; I	Fiori, 2018 [188]

Intervention/management strategy	Comparator	N	Outcome measures	Assessment timepoints	SD&OA*	Reference
P: Application of amniotic membrane to skin ulcers C: N/A: intraindividual assessment	N/A; intraindividual assessment	Intervention: 6 Control: N/A	Duration and outcome of treatment	Until ulcer resolution (up to 21 weeks)	10; I	Frech, 2019 [189]

***Study design and overall appraisal (adapted from the Joanna Briggs Institute Manual for Evidence Synthesis [190]):**

Notation	Study design
1	Analytical cross-sectional study
2	Case-control study
3	Case report
4	Case series
5	Cohort study
6	Diagnostic test accuracy study
7	Economic evaluation
8	Prevalence study
9	Qualitative research
10	Quasi-experimental study
11	Randomised controlled trial
12	Meta-analysis, with or without systematic review

Notation	Overall appraisal
R	Robust
I	Intermediate
W	Weak

Abbreviations:

6MWT: 6 minutes walking test; abPGSGA: Abridged Scored Patient-Generated Subjective Global Assessment; AC: acupuncture; ADL: activities in daily living; ANA: anti-nuclear antibody; aPL: antiphospholipid; AUC: area under the curve; BASS: Body Area Satisfaction Scale; BDI: Beck Depression Inventory; BF: breathing frequency; BF/CBT: Biofeedback-assisted cognitive-behavioural treatment; BMD: bone mineral density; BMI: body mass index; BP: bodily pain; BPI: Brief Pain Inventory; C: intervention/management strategy for the comparator group C3: complement component 3; C4: complement component 4; CASE: Children's Arthritis Self-Efficacy scale; CAT: complementary and alternative therapies; CC: calcinosis cutis; CCL4: chemokine (C-C motif) ligands 4; CECs: circulating endothelial cells; CES-D: Center for Epidemiological Studies-Depression; CT: cardiovascular training; CI: confidence interval; CLASI: cutaneous lupus erythematosus disease area and severity index; CRP: C-reactive protein; DAS28: Disease Activity Score-28; DASH: Disabilities of the Arm, Shoulder and Hand; DHA: docosahexaenoic acid; dsDNA: double-stranded DNA; DU: digital ulcers; ECLAM: European Consensus Lupus Activity Measurement; EPA: eicosapentaenoic acid; EPCs: endothelial progenitor cells; ER admission: emergency room admission; ES: effect size; ESR: erythrocyte sedimentation rate; ESWT: extracorporeal shock wave therapy; FACIT: Functional Assessment of Chronic Illness Therapy; FISI: Fecal Incontinence Severity Index; FMD: flow-mediated dilation; FSS: Fatigue Severity Scale; GFR: glomerular filtration rate; GH: general health; GHQ: General Health Questionnaire; GI: gingival index; GIT score: gastrointestinal tract score; HADS: Hospital Anxiety and Depression Scale; HAMIS: Hand Mobility in Scleroderma; HAQ: Health Assessment Questionnaire; HAQ-DI: HAQ-Disability Index; HDL: high-density lipoprotein; HeiQ: Health Education Impact Questionnaire; Hg: mercury; HOMA IR: Homeostatic Model Assessment for Insulin Resistance; HR: hazard ratio; HR: heart rate; HRQoL: health-related quality of life; hsCRP: high sensitivity C-reactive protein; IFN: interferon; Ig: immunoglobulin; IID: interincisal distance; IL: interleukin; IPL: intense pulsed light; IQR: interquartile range; IRR: incidence rate ratio; ITT: intention-to-treat; LDI: laser Doppler imaging: LDL: low-density lipoprotein; LE: lupus erythematosus; Lstren: lip strength; MN: minimal needling; MASRI: Medication Adherence Self-Report Inventory; MCID: minimal clinically important difference; METS: metabolic equivalent of task; MH: mental health; MHAQ: Modified Health Assessment Questionnaire; MHISS: Mouth Handicap in Systemic Sclerosis;MI-RSWB: Multidimensional Inventory of Religious/Spiritual Well-Being; MMO: maximal mouth opening; MPO: Myeloperoxidase; MPR: medication possession ratio; mRSS: modified Rodnan Skin Score; MSI: Mental Synthetic

Index: MUFA: monounsaturated fatty acids; MxA: myxovirus protein A; Ns: not significant; OCT: optical coherence tomography; P: intervention/management strategy for the population under investigation; PCS: mental component summary; PDL: pulsed-dye laser: PETCO2: end-tidal carbon dioxide pressure; PF: physical functioning; PGA: Physician Global Assessment; PH: physical health; PHP: Patient Hygiene Performance; PROMIS: Patient-Reported Outcomes Measurement Information System; PSI: Physical Synthetic Index; PSQ: Perceived Severity of Stress Questionnaire; PSQI: Pittsburgh Sleep Quality Index; PSS: Perceived Stress Scale; PtGA: Patient Global Assessment; PUFA: polyunsaturated fatty acids; PUVA: psoralen and ultraviolet A; PWC75%/kg: physical working capacity measured at 75% of the predicted maximal heart rate; RCP: respiratory compensation point; RCT: randomised clinical trial; RNP: ribonucleoprotein; ROM: range of motion; RP: role physical; RR: relative risk; RSE: Rosenberg Self-Esteem Scale; RT: resistance training; SDI: SLICC/ACR Damage Index; SE scale: Chronic Disease Self-Efficacy Scale; SEF: second self-efficacy for performing functions; SEOS: Self-Efficacy for controlling Other Symptoms; SEP: Self-Efficacy Perception for controlling pain; SF-36: short-form 36; SF-MPQ: Short-Form McGill Pain Questionnaire; SFA: saturated fatty acids; SFAQ: Scleroderma Functional Assessment Questionnaire; SGRQ: St. George's Respiratory Questionnaire; SIBID: Situational Inventory of Body Image Dysphoria; sICAM: soluble intracellular cellular adhesion molecule; SLAM: Systemic Lupus Activity Measure; SLAQ: Systemic Lupus Activity Questionnaire; SLE: systemic lupus erythematosus; SLEDAI: Systemic Lupus Erythematosus Disease Activity Index; Sm: Smith; SM: Social media; SMILEY: Simple Measure of the Impact of Lupus Erythematosus in Youngsters; SMS: Symptom-monitoring Support; SSc: systemic sclerosis; SSGLSS: Scleroderma Support Group Leader Self-efficacy Scale; Std: standard; sTNFR: soluble tumour necrosis factor receptor; taVNS: Transcutaneous auricular vagus nerve stimulation; TCM: traditional Chinese medicine; TE: expiratory time; TG: triglycerides; TI: inspiratory time; TLR: toll-like receptor; TNF: tumour necrosis factor; TOT: total respiratory time; Tprot: tongue protrusion; Tstren: tongue strength; TUG: Timed Up and Go; UC: usual care; UCLA GIT: University of California Los Angeles Scleroderma Clinical Trials Consortium Gastrointestinal Tract; UVA1: ultraviolet A1; VAS: visual analogue scale; VAT: ventilatory anaerobic threshold; VE/VCO2: ventilatory equivalent for carbon dioxide; VLDL: very low-density lipoprotein; VO2 max: maximal oxygen consumption; VT: tidal volume; VT: vitality; W: week; WHOQOL: World Health Organization Quality of Life Instrument.

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Supplemental Table S4

CRITICAL APPRAISAL OF RANDOMISED CONTROLLED TRIALS (STUDY TYPE 11; N = 81)

Reference/Questions* and LoE**	1	2	3	4	5	6	7	8	9	10	11	12	13	14	LoE
SLE															
Ramsey-Goldman, 2000 [1]	N	U	N	U	U	U	Y	Y	Y	Y	Y	N	Y	W	3
Dobkin, 2002 [2]	U	U	Y	U	U	U	Y	Y	Y	Y	Y	Y	Y	I	2
Shah, 2002 [3]	U	U	Y	U	U	U	Y	N	N	Y	U	Y	Y	W	3
Edworthy, 2003 [4]	U	U	Y	U	U	U	Y	U	U	Y	U	Y	Y	W	3
Tench, 2003 [5]	N	U	Y	U	U	U	Y	Y	Y	Y	Y	Y	Y	I	2
Duffy, 2004 [6]	U	U	N	Y	U	U	Y	N	N	Y	U	Y	Y	W	3
Greco, 2004 [7]	U	U	Y	N	U	Y	Y	Y	Y	Y	Y	Y	Y	I	2
Karlson, 2004 [8]	N	U	Y	U	U	U	Y	N	Y	Y	Y	Y	Y	W	3
Shah, 2004 [9]	U	U	Y	U	U	U	Y	N	N	Y	N	Y	Y	W	3
Wen, 2007 [10]	Y	U	Y	U	U	U	Y	N	N	Y	U	Y	Y	W	3
Greco, 2008 [11]	Y	Y	N	U	U	Y	Y	Y	Y	Y	U	Y	Y	I	2
Navarrete-Navarrete, 2010 [12]	U	U	Y	U	U	U	Y	N	N	Y	Y	Y	Y	W	3
Navarrete-Navarrete, 2010 [13]	N	U	Y	U	U	U	Y	U	U	Y	Y	Y	Y	W	3
Liao, 2011 [14]	Y	Y	Y	Y	Y	Y	Y	N	N	Y	U	Y	Y	I	2
Brown, 2012 [15]	U	U	N	U	U	U	Y	N	Y	Y	Y	Y	Y	W	3
Davies, 2012 [16]	N	U	U	U	U	U	Y	Y	Y	Y	Y	Y	Y	W	3
Ganachari, 2012 [17]	Y	U	U	U	U	U	Y	N	N	Y	N	Y	Y	W	3
Khajehdehi, 2012 [18]	U	U	Y	Y	U	Y	Y	Y	Y	Y	U	Y	Y	I	2
Miossi, 2012 [19]	U	U	Y	U	U	U	Y	N	Y	Y	U	Y	Y	W	3
Ting, 2012 [20]	U	U	Y	U	U	U	Y	U	U	Y	U	Y	Y	W	3
Linda, 2013 [21]	Y	Y	Y	N	N	Y	Y	N	Y	Y	U	Y	Y	I	2
Williams, 2014 [22]	U	U	Y	U	U	U	Y	N	N	Y	U	Y	Y	W	3
Williams, 2014 [23]	U	U	Y	U	U	U	U	N	N	Y	U	Y	U	W	3
Benatti, 2015 [24]	Y	U	Y	U	U	U	Y	N	N	Y	U	Y	Y	W	3
Bogdanovic, 2015 [25]	U	U	U	U	U	U	Y	U	U	Y	U	Y	U	W	3
Abrahao, 2016 [26]	Y	Y	Y	N	U	U	Y	N	Y	Y	Y	Y	Y	I	2
Avaux, 2016 [27]	N	U	Y	U	U	U	Y	N	U	Y	Y	Y	Y	W	3
Bostrom, 2016 [28]	N	Y	Y	N	N	Y	Y	Y	Y	Y	Y	Y	Y	I	2
Zhang, 2016 [29]	U	U	Y	U	U	U	Y	U	U	Y	U	Y	Y	W	3
Shamekhi, 2017 [30]	Y	Y	N	Y	Y	U	Y	N	N	Y	U	Y	Y	I	2
Solati, 2017 [31]	U	U	Y	U	U	U	Y	Y	Y	Y	Y	Y	Y	I	2
Benatti, 2018 [32]	U	U	Y	U	U	U	Y	Y	N	Y	U	Y	Y	W	3
Rothman, 2018 [33]	U	U	U	U	U	U	Y	U	U	Y	U	Y	Y	W	3
Scalzi, 2018 [34]	U	U	Y	U	U	U	Y	Y	N	Y	U	Y	Y	W	3
Xie, 2018 [35]	U	Y	Y	N	U	Y	Y	N	N	Y	Y	Y	Y	I	2

Reference/Questions* and LoE**	1	2	3	4	5	6	7	8	9	10	11	12	13	14	LoE
Conceição [36], 2019	Y	N	Y	N	U	Y	Y	N	Y	Y	Y	Y	Y	I	2
Wu, 2019 [37]	Y	U	Y	U	U	Y	Y	N	Y	Y	N	Y	Y	I	2
Zhang, 2019 [38]	Y	U	Y	U	U	U	Y	N	N	Y	U	Y	Y	W	3
Harry, 2020 [39]	Y	U	N	U	U	U	Y	Y	N	Y	N	Y	Y	W	3
Kankaya, 2020 [40]	Y	U	N	N	U	U	Y	Y	N	Y	Y	Y	Y	W	3
Keramiotou, 2020 [41]	Y	N	N	N	N	U	Y	N	N	Y	Y	Y	Y	W	3
Khan, 2020 [42]	Y	N	Y	N	U	U	Y	N	N	Y	Y	Y	Y	W	3
Oliveira, 2020 [43]	Y	U	N	U	U	U	Y	Y	N	Y	Y	Y	Y	W	3
Allen, 2021 [44]	U	U	Y	U	U	U	Y	N	Y	Y	Y	Y	Y	W	3
Aranow, 2021 [45]	Y	U	Y	Y	N	Y	Y	Y	N	Y	Y	Y	Y	I	2
Dionello, 2021 [46]	Y	Y	Y	Y	Y	U	N	N	N	Y	U	Y	Y	I	2
Lopes-Souza, 2021 [47]	U	U	N	U	U	U	Y	N	N	Y	U	Y	Y	W	3
White, 2021 [48]	Y	U	U	U	N	N	Y	N	N	Y	Y	Y	Y	W	3
Xu, 2021 [49]	U	U	Y	U	U	U	Y	U	U	Y	Y	Y	Y	W	3
SSc															
Bongi, 2009 [50]	Y	Y	Y	U	N	U	Y	Y	Y	Y	Y	Y	Y	I	2
Maddali Bongi, 2009 [51]	Y	U	Y	U	U	U	Y	Y	Y	N	U	Y	Y	W	3
Bongi, 2011 [52]	Y	Y	Y	N	N	Y	Y	Y	Y	Y	Y	Y	Y	R	2
Maddali Bongi, 2011 [53]	Y	U	Y	U	U	U	Y	Y	Y	Y	Y	Y	Y	I	2
Schouffoer, 2011 [54]	N	U	Y	U	N	Y	Y	Y	Y	Y	Y	Y	Y	I	2
Yuen, 2011 [55]	N	U	U	Y	U	Y	Y	N	U	Y	Y	Y	Y	W	3
Sporbeck, 2012 [56]	U	U	N	U	U	U	U	U	U	Y	U	Y	U	W	3
Yuen, 2012 [57]	Y	N	N	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	I	2
Yuen, 2012 [58]	U	U	Y	U	N	Y	Y	Y	Y	Y	Y	Y	U	I	2
Piga, 2014 [59]	Y	U	Y	U	U	U	N	N	N	Y	Y	Y	Y	W	3
Vannajak, 2014 [60]	U	U	N	U	U	U	Y	U	U	U	U	Y	Y	W	3
Stefanantoni, 2016 [61]	U	U	Y	Y	N	Y	Y	U	U	Y	Y	Y	Y	I	2
Rannou, 2017 [62]	Y	Y	Y	Y	U	Y	Y	Y	Y	Y	Y	Y	Y	R	2
Hassanien, 2018 [63]	Y	U	Y	U	U	U	Y	U	U	Y	U	Y	Y	W	3
Mitropoulos, 2018 [64]	U	U	N	U	U	U	U	N	N	Y	U	Y	Y	W	3
Zhou, 2018 [65]	Y	Y	Y	Y	U	U	Y	N	N	Y	U	Y	Y	I	2
Dewi, 2019 [66]	Y	Y	N	Y	Y	Y	Y	N	N	Y	U	Y	Y	I	2
Gregory, 2019 [67]	Y	Y	Y	N	N	Y	Y	Y	N	Y	Y	Y	Y	I	2
Khanna, 2019 [68]	Y	U	N	U	N	U	N	N	N	N	Y	Y	Y	W	3
Kristensen, 2019 [69]	Y	Y	N	N	N	Y	Y	N	N	Y	Y	Y	Y	I	2
Lange, 2019 [70]	Y	U	Y	U	U	Y	Y	Y	Y	Y	Y	Y	Y	I	2
Low, 2019 [71]	Y	Y	N	Y	Y	Y	Y	N	Y	Y	U	Y	Y	I	2
Marighela, 2019 [72]	N	U	Y	Y	U	U	Y	U	U	Y	U	Y	Y	W	3
Mitropoulos, 2019 [73]	Y	U	U	N	U	U	Y	U	Y	Y	U	Y	Y	W	3
Uras, 2019 [74]	Y	Y	N	U	N	Y	Y	Y	Y	Y	Y	Y	Y	I	2
Cetin, 2020 [75]	Y	U	Y	U	U	U	Y	N	N	Y	U	Y	Y	W	3

Reference/Questions* and LoE**	1	2	3	4	5	6	7	8	9	10	11	12	13	14	LoE
Filippetti, 2020 [76]	Y	U	N	U	U	Y	Y	Y	Y	Y	Y	Y	Y	I	2
Fretheim, 2020 [77]	Y	Y	N	Y	Y	Y	Y	Y	N	Y	U	Y	Y	I	2
Cüzdan, 2021 [78]	Y	Y	N	Y	U	Y	Y	N	N	Y	Y	Y	Y	I	2
Gokcen, 2021 [79]	Y	Y	N	Y	N	Y	Y	N	N	Y	Y	Y	Y	I	2
Maddali Bongi, 2021 [80]	U	U	Y	U	U	U	N	U	U	Y	U	Y	N	W	3
Murphy, 2021 [81]	U	U	Y	U	N	N	N	N	Y	N	N	Y	Y	W	3

***Questions (according to the Joanna Briggs Institute critical appraisal tools [82]):**

1. Was true randomization used for assignment of participants to treatment groups?
2. Was allocation to treatment groups concealed?
3. Were treatment groups similar at the baseline?
4. Were participants blind to treatment assignment?
5. Were those delivering treatment blind to treatment assignment?
6. Were outcomes assessors blind to treatment assignment?
7. Were treatment groups treated identically other than the intervention of interest?
8. Was follow up complete and if not, were differences between groups in terms of their follow up adequately described and analysed?
9. Were participants analysed in the groups to which they were randomized?
10. Were outcomes measured in the same way for treatment groups?
11. Were outcomes measured in a reliable way?
12. Was appropriate statistical analysis used?
13. Was the trial design appropriate, and any deviations from the standard RCT design (individual randomization, parallel groups) accounted for in the conduct and analysis of the trial?
14. Overall appraisal?

****LoE: Levels of evidence according to the Oxford Centre for Evidence-Based Medicine [83]**

Cell	Interpretation
Y/R	Yes/robust
N/W	No/weak
U/I	Unclear/intermediate
/	Not applicable

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Supplemental Table S5

CRITICAL APPRAISAL OF QUASI-EXPERIMENTAL STUDIES (STUDY TYPE 10; N = 75)

Reference/Questions* and LoE**	1	2	3	4	5	6	7	8	9	10	LoE
SLE											
Stege, 2000 [1]	Y	/	/	N	Y	Y	/	U	/	R	4
Sohng, 2003 [2]	Y	N	Y	Y	U	U	Y	U	Y	I	3
Ward, 2003 [3]	Y	/	/	N	U	N	/	Y	Y	I	4
Carvalho, 2005 [4]	Y	/	/	N	U	N	/	Y	Y	I	4
Clarke-Jenssen, 2005 [5]	Y	/	/	N	Y	Y	/	Y	Y	R	4
Goodman, 2005 [6]	Y	N	Y	Y	Y	N	N	Y	Y	I	3
Harrison, 2005 [7]	Y	/	/	N	U	Y	/	U	Y	I	4
Haupt, 2005 [8]	Y	N	Y	Y	U	Y	U	U	Y	I	3
Szegedi, 2005 [9]	Y	/	/	N	U	Y	/	U	Y	I	4
Ng, 2007 [10]	Y	Y	Y	Y	U	U	Y	Y	Y	R	3
Erceg, 2009 [11]	Y	/	/	N	Y	U	/	Y	Y	R	4
Otto, 2011 [12]	Y	/	/	N	U	N	U	U	U	W	5
Yuen, 2011 [13]	Y	/	/	N	U	Y	/	Y	Y	R	4
Drenkard, 2012 [14]	Y	/	/	N	U	Y	/	U	Y	I	4
da Silva, 2013 [15]	Y	N	N	Y	N	Y	Y	U	Y	I	3
dos Reis-Neto, 2013 [16]	Y	Y	Y	Y	U	N	Y	Y	Y	R	3
Bantornwan, 2014 [17]	Y	N	Y	Y	U	U	N	U	Y	I	3
Jolly, 2014 [18]	Y	N	Y	Y	U	U	Y	U	Y	I	3
Perandini, 2014 [19]	Y	N	N	Y	U	Y	Y	U	Y	I	3
Zahn, 2014 [20]	Y	N	N	Y	U	Y	Y	Y	Y	I	3
Everett, 2015 [21]	Y	Y	Y	N	N	Y	N	U	Y	I	4

Reference/Questions* and LoE**	1	2	3	4	5	6	7	8	9	10	LoE
Perandini, 2015 [22]	Y	N	N	Y	Y	U	Y	U	Y	I	3
Perandini, 2016 [23]	Y	N	N	Y	U	Y	Y	U	Y	I	3
O'Riordan, 2017 [24]	Y	/	/	N	U	N	/	U	Y	I	4
Sahebalzamani, 2017 [25]	Y	/	/	N	U	N	/	Y	Y	I	4
Yelnik, 2017 [26]	Y	/	/	N	U	Y	/	U	Y	I	4
Kusnanto, 2018 [27]	Y	/	/	N	U	U	/	Y	Y	I	4
Soriano-Maldonado, 2018 [28]	Y	Y	Y	Y	U	N	Y	U	Y	I	3
Timoteo, 2018 [29]	Y	Y	Y	Y	U	U	Y	Y	Y	R	3
Williams, 2018 [30]	Y	/	/	N	U	N	/	U	Y	I	4
Kim, 2019 [31]	Y	/	/	N	U	U	/	Y	Y	I	4
Rerknimitr, 2019 [32]	Y	/	/	N	U	U	/	Y	Y	I	4
Sahebari, 2019 [33]	Y	U	Y	Y	U	U	Y	Y	Y	I	3
Sheikh, 2019 [34]	Y	/	/	N	U	Y	/	N	Y	I	4
Williams, 2019 [35]	Y	/	/	N	U	N	/	Y	Y	I	4
Abdelaziz, 2020 [36]	Y	Y	Y	Y	U	Y	Y	Y	Y	R	3
Gavilan-Carrera, 2020 [37]	Y	N	Y	Y	U	N	Y	Y	Y	I	3
Kao, 2021 [38]	Y	Y	U	Y	U	N	Y	U	Y	I	3
SSc											
Samuelson, 2000 [39]	Y	/	/	N	U	Y	/	Y	N	I	4
Pizzo, 2003 [40]	Y	/	/	N	U	Y	/	Y	Y	R	4
Sandqvist, 2004 [41]	Y	/	/	N	U	N	/	U	Y	I	4
Foerster, 2005 [42]	Y	/	/	N	U	U	/	U	U	I	4
Mugii, 2006 [43]	Y	N	N	Y	U	Y	N	Y	Y	I	3
Sallam, 2007 [44]	Y	N	N	Y	U	U	N	U	Y	W	4
Antonioli, 2009 [45]	Y	Y	Y	Y	U	Y	Y	Y	Y	R	3
Oliveira, 2009 [46]	Y	N	N	Y	U	U	Y	U	Y	I	3
Poole, 2010 [47]	Y	/	/	N	U	Y	/	U	Y	I	4
Frech, 2011 [48]	Y	/	/	N	N	U	/	Y	Y	I	4
Kwakkenbos, 2011 [49]	Y	/	/	N	U	Y	/	Y	Y	R	4
Pinto, 2011 [50]	Y	/	/	N	U	Y	/	Y	Y	R	4
Tinazzi, 2011 [51]	Y	/	/	N	U	N	/	U	Y	I	4
Murray, 2012 [52]	Y	/	/	N	U	Y	/	Y	Y	R	4
Belloli, 2013 [53]	Y	/	/	N	U	U	/	U	U	I	4
McNearney, 2013 [54]	Y	/	/	N	U	U	/	U	Y	I	4
Poole, 2013 [55]	Y	/	/	N	U	Y	/	U	Y	I	4
Dinsdale, 2014 [56]	Y	/	/	N	U	N	/	Y	Y	I	4
Ortiz-Santamaria, 2014 [57]	Y	/	/	N	U	N	/	U	Y	I	4
Poole, 2014 [58]	Y	/	/	N	U	Y	/	Y	Y	R	4
Saito, 2016 [59]	Y	Y	Y	Y	U	U	U	U	U	I	3
Saito, 2016 [60]	Y	/	/	N	U	Y	/	U	Y	I	4
Doerfler, 2017 [61]	Y	/	/	N	U	Y	/	U	Y	I	4

Reference/Questions* and LoE**	1	2	3	4	5	6	7	8	9	10	LoE
Horváth, 2017 [62]	Y	Y	Y	Y	N	U	Y	Y	Y	R	3
Parisi, 2017 [63]	Y	/	/	N	U	U	/	U	Y	I	4
Rosholm Comstedt, 2017 [64]	Y	/	/	N	U	N	/	Y	Y	I	4
Zanatta, 2017 [65]	Y	Y	Y	Y	U	Y	Y	Y	Y	R	3
Brignoli, 2018 [66]	Y	/	/	N	Y	U	/	Y	Y	R	4
Fiori, 2018 [67]	Y	U	Y	Y	U	U	Y	Y	Y	I	3
Murphy, 2018 [68]	Y	/	/	N	N	Y	/	Y	Y	R	4
Frech, 2019 [69]	Y	/	/	N	U	Y	/	U	/	I	4
Hughes, 2019 [70]	Y	/	/	N	U	Y	/	Y	Y	R	4
Landim, 2019 [71]	Y	/	/	N	N	Y	/	Y	Y	R	4
Nowicka, 2019 [72]	Y	/	/	N	U	Y	/	U	Y	I	4
Thombs, 2019 [73]	Y	/	/	N	U	Y	/	Y	Y	R	4
Landim, 2020 [74]	Y	N	Y	Y	U	N	Y	Y	Y	I	3
Defi, 2021 [75]	Y	/	/	N	U	U	/	U	U	I	4

***Questions (according to the Joanna Briggs Institute critical appraisal tools [76]):**

1. Is it clear in the study what is the 'cause' and what is the 'effect' (i.e., there is no confusion about which variable comes first)?
2. Were the participants included in any comparisons similar?
3. Were the participants included in any comparisons receiving similar treatment/care, other than the exposure or intervention of interest?
4. Was there a control group?
5. Were there multiple measurements of the outcome both pre and post the intervention/exposure?
6. Was follow up complete and if not, were differences between groups in terms of their follow up adequately described and analysed?
7. Were the outcomes of participants included in any comparisons measured in the same way?
8. Were outcomes measured in a reliable way?
9. Was appropriate statistical analysis used?
10. Overall appraisal?

****LoE: Levels of evidence according to the Oxford Centre for Evidence-Based Medicine [77]**

Cell	Interpretation
Y/R	Yes/robust
N/W	No/weak
U/I	Unclear/intermediate
/	Not applicable

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Supplemental Table S6

CRITICAL APPRAISAL OF ANALYTICAL CROSS-SECTIONAL STUDIES (STUDY TYPE 1; N = 17)

Reference/Questions* and LoE**	1	2	3	4	5	6	7	8	9	LoE
SLE										
Dorsey, 2004 [1]	Y	N	/	Y	Y	Y	U	Y	R	3
Alvarez-Nemegyei, 2009 [2]	Y	Y	/	Y	Y	Y	Y	Y	R	3
Aghdassi, 2010 [3]	Y	Y	/	Y	U	N	Y	U	I	3
do Prado, 2011 [4]	Y	Y	/	Y	U	N	Y	Y	R	3
Elkan, 2012 [5]	Y	Y	/	Y	U	N	U	Y	I	3
Barnes, 2014 [6]	N	Y	/	Y	U	N	Y	Y	I	3
Xu, 2015 [7]	Y	Y	U	Y	Y	Y	U	Y	R	3
Arat, 2017 [8]	Y	Y	/	U	U	U	Y	Y	I	3
Abdul Kadir, 2018 [9]	Y	Y	/	Y	U	N	U	U	I	3
Morgan, 2018 [10]	N	N	/	U	U	U	Y	Y	I	3
Li, 2019 [11]	Y	Y	/	Y	Y	Y	U	Y	R	3
Pocovi-Gerardino, 2021 [12]	Y	Y	Y	Y	Y	Y	U	Y	R	3
SSc										
Rubenzik, 2009 [13]	Y	Y	/	U	U	U	U	Y	I	3
Schouffoer, 2011 [14]	Y	Y	/	Y	U	U	N	Y	I	3
Lima, 2015 [15]	Y	Y	Y	Y	U	Y	U	Y	R	3
Arat, 2017 [8]	Y	Y	/	U	U	U	Y	Y	I	3
Delisle, 2019 [16]	N	N	/	U	U	U	N	Y	W	4
Stöcker, 2021 [17]	N	N	Y	N	U	U	N	Y	W	4

***Questions (according to the Joanna Briggs Institute critical appraisal tools [18]):**

1. Were the criteria for inclusion in the sample clearly defined?
2. Were the study subjects and the setting described in detail?
3. Was the exposure measured in a valid and reliable way?
4. Were objective, standard criteria used for measurement of the condition?

5. Were confounding factors identified?

6. Were strategies to deal with confounding factors stated?

7. Were the outcomes measured in a valid and reliable way?

8. Was appropriate statistical analysis used?

9. Overall appraisal?

****LoE: Levels of evidence according to the Oxford Centre for Evidence-Based Medicine [19]**

Cell	Interpretation
Y/R	Yes/robust
N/W	No/weak
U/I	Unclear/intermediate
/	Not applicable

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Supplemental Table S7

CRITICAL APPRAISAL OF QUALITATIVE STUDIES (STUDY TYPE 9; N = 16)

Reference/Questions* and LoE**	1	2	3	4	5	6	7	8	9	10	11	LoE
SLE												
Brown, 2004 [1]	/	Y	Y	Y	Y	N	N	Y	Y	Y	R	4
Miljeteig, 2009 [2]	Y	Y	Y	Y	Y	N	N	Y	Y	Y	R	4
Feldman, 2013 [3]	/	Y	Y	Y	Y	N	N	Y	Y	Y	R	4
Terrell, 2015 [4]	Y	U	U	U	U	N	N	U	U	Y	W	5
Brennan, 2016 [5]	/	Y	Y	Y	Y	N	N	Y	Y	Y	R	4
Middleton, 2018 [6]	U	U	U	U	U	N	N	Y	Y	Y	W	5
Leung, 2019 [7]	/	Y	Y	Y	Y	N	N	Y	Y	Y	R	4
Sloan, 2021 [8]	/	Y	Y	Y	Y	N	N	Y	Y	Y	R	4
SSc												
Joachim, 2003 [9]	/	Y	Y	Y	Y	N	N	Y	U	Y	I	4
Brown, 2004 [1]	/	Y	Y	Y	Y	N	N	Y	Y	Y	R	4
Willems, 2015 [10]	/	Y	Y	Y	Y	N	N	Y	U	Y	I	4
Mouthon, 2017 [11]	Y	Y	Y	Y	Y	N	N	Y	Y	Y	R	4
Gumuchian, 2018 [12]	Y	Y	Y	Y	Y	N	N	Y	Y	Y	R	4
Milette, 2020 [13]	/	Y	Y	Y	Y	N	N	Y	Y	Y	R	4
Pettersson, 2020 [14]	/	Y	Y	Y	Y	N	N	Y	Y	Y	R	4
van Leeuwen, 2020 [15]	/	Y	Y	Y	Y	N	N	Y	Y	Y	R	4
Harb, 2021 [16]	/	Y	Y	Y	Y	N	N	Y	Y	Y	R	4

***Questions (according to the Joanna Briggs Institute critical appraisal tools [17]):**

1. Is there congruity between the stated philosophical perspective and the research methodology?
2. Is there congruity between the research methodology and the research question or objectives?
3. Is there congruity between the research methodology and the methods used to collect data?
4. Is there congruity between the research methodology and the representation and analysis of data?
5. Is there congruity between the research methodology and the interpretation of results?
6. Is there a statement locating the researcher culturally or theoretically?
7. Is the influence of the researcher on the research, and vice- versa, addressed?
8. Are participants, and their voices, adequately represented?
9. Is the research ethical according to current criteria or, for recent studies, and is there evidence of ethical approval by an appropriate body?
10. Do the conclusions drawn in the research report flow from the analysis, or interpretation, of the data?
11. Overall appraisal?

****LoE: Levels of evidence according to the Oxford Centre for Evidence-Based Medicine [18]**

Cell	Interpretation
Y/R	Yes/robust
N/W	No/weak
U/I	Unclear/intermediate
/	Not applicable

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Supplemental Table S8

CRITICAL APPRAISAL OF CASE SERIES (STUDY TYPE 4; N = 5)

Reference/Questions* and LoE**	1	2	3	4	5	6	7	8	9	10	11	LoE
SLE												
Horesh, 2017 [1]	N	U	U	U	U	N	N	N	Y	/	W	5
SSc												
O'Connor, 2016 [2]	Y	U	U	U	U	Y	Y	Y	Y	U	I	4
Onesti, 2016 [3]	Y	U	U	Y	U	N	Y	Y	Y	U	I	4
Burillo-Martinez, 2017 [4]	Y	U	U	U	Y	Y	N	Y	Y	/	I	4
Mirasoglu, 2017 [5]	N	U	U	U	U	Y	Y	Y	Y	/	I	4

***Questions (according to the Joanna Briggs Institute critical appraisal tools [6]):**

1. Were there clear criteria for inclusion in the case series?

2. Was the condition measured in a standard, reliable way for all participants included in the case series?
3. Were valid methods used for identification of the condition for all participants included in the case series?
4. Did the case series have consecutive inclusion of participants?
5. Did the case series have complete inclusion of participants?
6. Was there clear reporting of the demographics of the participants in the study?
7. Was there clear reporting of clinical information of the participants?
8. Were the outcomes or follow up results of cases clearly reported?
9. Was there clear reporting of the presenting site(s)/clinic(s) demographic information?
10. Was statistical analysis appropriate?
11. Overall appraisal?

****LoE: Levels of evidence according to the Oxford Centre for Evidence-Based Medicine [7]**

Cell	Interpretation
Y/R	Yes/robust
N/W	No/weak
U/I	Unclear/intermediate
/	Not applicable

References:

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Supplemental Table S9

CRITICAL APPRAISAL OF COHORT STUDIES (STUDY TYPE 5; N = 5)

Reference/Questions* and LoE**	1	2	3	4	5	6	7	8	9	10	11	12	LoE
SLE													
Minami, 2003 [1]	Y	Y	Y	Y	Y	Y	U	Y	Y	Y	Y	R	3
Herzinger, 2004 [2]	U	Y	/	N	N	U	N	Y	/	/	U	W	4
Minami, 2011 [3]	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	R	3
Patterson, 2021 [4]	Y	Y	/	Y	Y	Y	Y	Y	U	U	Y	R	3

SSc													
Azar, 2018 [5]	Y	Y	U	N	N	N	Y	Y	Y	Y	Y	I	3

***Questions (according to the Joanna Briggs Institute critical appraisal tools [6]):**

1. Were the two groups similar and recruited from the same population?
2. Were the exposures measured similarly to assign people to both exposed and unexposed groups?
3. Was the exposure measured in a valid and reliable way?
4. Were confounding factors identified?
5. Were strategies to deal with confounding factors stated?
6. Were the groups/participants free of the outcome at the start of the study (or at the moment of exposure)?
7. Were the outcomes measured in a valid and reliable way?
8. Was the follow up time reported and sufficient to be long enough for outcomes to occur?
9. Was follow up complete, and if not, were the reasons to loss to follow up described and explored?
10. Were strategies to address incomplete follow up utilized?
11. Was appropriate statistical analysis used?
12. Overall appraisal?

****LoE: Levels of evidence according to the Oxford Centre for Evidence-Based Medicine [7]**

Cell	Interpretation
Y/R	Yes/robust
N/W	No/weak
U/I	Unclear/intermediate
/	Not applicable

References:

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Supplemental Table S10

CRITICAL APPRAISAL OF META-ANALYSES, WITH OR WITHOUT SYSTEMATIC REVIEWS (STUDY TYPE 12; N = 5)

Reference/Questions* and LoE**	1	2	3	4	5	6	7	8	9	10	11	12	LoE
SLE													
Zhang, 2012 [1]	Y	Y	Y	Y	Y	U	Y	Y	Y	Y	Y	R	1
Liang, 2014 [2]	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	R	1
O'Dwyer, 2017 [3]	Y	Y	Y	Y	Y	Y	Y	Y	U	Y	Y	R	1
Wu, 2017 [4]	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	R	1
da Hora, 2019 [5]	Y	Y	Y	N	Y	U	Y	Y	Y	Y	Y	R	3

***Questions (according to the Joanna Briggs Institute critical appraisal tools [6]):**

1. Is the review question clearly and explicitly stated?
2. Were the inclusion criteria appropriate for the review question?
3. Was the search strategy appropriate?
4. Were the sources and resources used to search for studies adequate?
5. Were the criteria for appraising studies appropriate?
6. Was critical appraisal conducted by two or more reviewers independently?
7. Were there methods to minimize errors in data extraction?
8. Were the methods used to combine studies appropriate?
9. Was the likelihood of publication bias assessed?
10. Were recommendations for policy and/or practice supported by the reported data?
11. Were the specific directives for new research appropriate?
12. Overall appraisal?

****LoE: Levels of evidence according to the Oxford Centre for Evidence-Based Medicine [7]**

Cell	Interpretation
Y/R	Yes/robust
N/W	No/weak
U/I	Unclear/intermediate
/	Not applicable

References:

1. Zhang J, Wei W, Wang CM. Effects of psychological interventions for patients with systemic lupus erythematosus: a systematic review and meta-analysis. Lupus. 2012 2012; 21(10):1077-1087.
2. Liang H, Tian X, Cao LY, Chen YY, Wang CM. Effect of psychological intervention on healthrelated quality of life in people with systemic lupus erythematosus: A systematic review. International Journal of Nursing Sciences. 2014 2014; 1(3):298-305.
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Supplemental Table S11

CRITICAL APPRAISAL OF CASE-CONTROL STUDIES (STUDY TYPE 2; N = 3)

Reference/Questions* and LoE**	1	2	3	4	5	6	7	8	9	10	11	LoE
SLE												
Squance, 2015 [1]	Y	U	U	/	Y	U	U	/	Y	Y	I	4
SSc												
Collins, 2016 [2]	N	Y	N	Y	Y	Y	Y	Y	Y	Y	R	4
Giuggioli, 2020 [3]	U	U	Y	Y	Y	N	N	Y	Y	Y	I	4

***Questions (according to the Joanna Briggs Institute critical appraisal tools [4]):**

1. Were the groups comparable other than the presence of disease in cases or the absence of disease in controls?
2. Were cases and controls matched appropriately?
3. Were the same criteria used for identification of cases and controls?
4. Was exposure measured in a standard, valid and reliable way?
5. Was exposure measured in the same way for cases and controls?
6. Were confounding factors identified?
7. Were strategies to deal with confounding factors stated?
8. Were outcomes assessed in a standard, valid and reliable way for cases and controls?
9. Was the exposure period of interest long enough to be meaningful?
10. Was appropriate statistical analysis used?
11. Overall appraisal?

****LoE: Levels of evidence according to the Oxford Centre for Evidence-Based Medicine [5]**

Cell	Interpretation
Y/R	Yes/robust
N/W	No/weak
U/I	Unclear/intermediate
/	Not applicable

References:

1. Squance ML, Reeves G, Attia J, Bridgman H, Guest M. Self-reported Lupus flare: Association with everyday home and personal product exposure. Toxicology Reports. 2015 2015; 2:880-888.
2. Collins J, Mazor Y, Jones M, Kellow J, Malcolm A. Efficacy of anorectal biofeedback in scleroderma patients with fecal incontinence: a case-control study. Scandinavian Journal of Gastroenterology. 2016 2016; 51(12):1433-1438.

3. Giuggioli D, Lumetti F, Spinella A, Cocchiara E, Sighinolfi G, Citriniti G, et al. Use of Neem oil and Hypericum perforatum for treatment of calcinosis-related skin ulcers in systemic sclerosis. Journal of International Medical Research. 2020 2020; 48(4):300060519882176.
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