

**Comment on: The 2024 British Society for Rheumatology guideline for management of systemic sclerosis.**

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4 **sclerosis**  
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3 Dear Editor,  
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5 It is with great interest that we read, the recently published article entitled 'The 2024 British Society  
6 for Rheumatology guideline for management of systemic sclerosis' by Denton and colleagues<sup>1</sup>.  
7 Although the article comprehensively describes the medical treatment options for the management  
8 of systemic sclerosis (SSc) it only briefly attends to the non-pharmacological, SSc treatments, in  
9 general and to exercise in specific. As the latter has demonstrated several benefits in this population,  
10 we are writing this short critique to draw your readers' attention to those.  
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15 Physical activity and exercise are universally recommended, but for connective tissue diseases, their  
16 impact is especially significant in reducing inflammation, aiding recovery, and improving  
17 cardiovascular health<sup>2</sup>. Exercise helps address key disease mechanisms by reducing inflammatory and  
18 fibrotic pathways in both the blood and tissues, while also enhancing circulation and promoting  
19 vascular repair through muscle and blood vessel responses<sup>2</sup>.  
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#### 25 *Digital microvasculature*

26 Digital vasculopathy leads to Raynaud's phenomenon and digital ischaemia with the concomitant  
27 development of severe complications (e.g., ulceration and infection of superficial and deep tissues  
28 including gangrene). Exercise (aerobic and resistance training) has demonstrated the potential to  
29 improve the digital microvascular function in people with limited cutaneous SSc preventing  
30 simultaneously the development of digital ulcers, gangrene and potential concomitant digital  
31 amputations<sup>3,4</sup>.  
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#### 37 *Cardiac function*

38 Vascular dysfunction and its concomitant multi-organ involvement, including cardiac involvement,  
39 affects prognosis in systemic sclerosis (SSc) patients. Exercise in PwSSc has demonstrated to  
40 significantly increase the global right ventricular (RV) free wall longitudinal systolic strain, RV free wall  
41 longitudinal systolic strain of the basal segment, and global RV four-chamber longitudinal systolic  
42 strain as those assessed by a two-dimensional speckle tracking echocardiography (2DSTE) focused on  
43 RV morphology and function<sup>5</sup>.  
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#### 51 *Pain, fatigue, depression and quality of life*

52 A recent six-centre European large cohort (n=170) definitive research clinical trial showed that a  
53 combined exercise protocol (see detailed training dose below) in PwSSc can significantly improve two  
54 of the most debilitating symptoms in SSc (i.e., pain and fatigue) including depressive symptoms and  
55 QoL compared to no exercise (i.e., control group)<sup>6</sup>. Interestingly, most of the improvements were  
56 maintained at the 6-month follow up (i.e., 3 months post-exercise intervention).  
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### *Physical fitness and functional capacity*

Physical fitness is strongly linked to SSc-related QoL leading to an improved daily activities capacity in PwSSc, physical independency, increased energy levels<sup>7</sup>. Regular exercise can also improve the cardiorespiratory fitness (as assessed by peak oxygen uptake tests) and upper body musculoskeletal strength and endurance<sup>3,6,4</sup>.

### *Feasibility and safety of exercise*

Exercise has demonstrated to be feasible, enjoyable and safe in PwSSc<sup>7</sup>. Namely, a combined exercise protocol was feasible for people with limited cutaneous SSc, with no adverse events, resulting in high adherence and low attrition rates, high enjoyment levels and intentions for future engagement to exercise<sup>7</sup>.

### **Non-pharmacological recommendations for the management of systemic sclerosis**

Exercise has also been recommended as a non-pharmacological treatment for SSc by the recently published European Alliances of Association for Rheumatology (EULAR) recommendations<sup>8</sup>. Exercise has found to significantly improve health-related QoL in PwSSc.

### *Recommended exercise guidelines*

The minimum effective training period and frequency is suggested to be around 12 weeks, twice per week. Although, the included studies have mainly tested an upper body exercise protocol, a whole-body training approach is recommended for future studies and/or strategic exercise treatment. A whole-body training approach would add musculoskeletal strength and endurance to the lower limbs which are commonly used for daily activities.

It is also recommended that the exercise protocol should be a combination of aerobic and resistance training. For the aerobic training, an individualised high-intensity interval training (HIIT; 30 s at 100% of peak power output and 30-s passive recovery) of 30 minutes has been shown to be feasible, safe, enjoyable and effective in PwSSc<sup>7,6,4,5</sup>. The resistance training an upper body (5 exercises of main muscle groups) circuit (3 circles) training has found to be effective of an intensity of 75–80% of one repetition maximum performing 10 repetitions of each exercise interspersed by 20–30 s to allow for safe movement between exercises. Both for the aerobic and resistance training, the individualised progression shall be monitored based on the daily corresponding heart rate and ratings of perceived exertion via the Borg scale (6-20 points).

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3 It is important to emphasize that exercise shall be treated as a long-term lifestyle change in PwSSc  
4 adjunct to pharmacotherapy and not as a short-term (i.e.,  $\geq 12$  weeks) temporary prevention and/or  
5 rehabilitation non-pharmacological treatment.  
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9 *Future directions*

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11 The current evidence concerning the effects, feasibility and safety of exercise as a non-  
12 pharmacological treatment adjunct to pharmacotherapy for PwSSc highlight the need for the  
13 implementation of exercise in SSc to improve PwSSc QoL. The extensive inclusion of exercise as a non-  
14 pharmacological treatment for the management of SSc in the future British Society for Rheumatology  
15 and National Institute for Health and Care Excellence guidelines is warranted.  
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