Correspondence -Scientific critique on the effects of supervised exercise program and home exercise program in patients with systemic sclerosis: A randomized controlled trial.

MITROPOULOS, Alexandros <http://orcid.org/0000-0002-9453-0808> and KLONIZAKIS, Markos <http://orcid.org/0000-0002-8864-4403>

Scientific critique on the effects of supervised exercise program and home exercise program in patients with systemic sclerosis: A randomized controlled trial

Letter to the Editor

Alexandros Mitropoulos, Markos Klonizakis

Lifestyle, Exercise and Nutrition Improvement (LENI) Research Group, Department of Nursing and Midwifery, College of Health Wellbeing and Life Science, Sheffield Hallam University, Sheffield, UK.

Dear editors,

We read with great interest the article by Yakut et al.[1] which focused in comparing the effects of a supervised and a home-based exercise program in people with systemic sclerosis (SSc). The study concludes that both exercise programs can improve the functional capacity and health status in people with SSc. Nevertheless, we remain sceptical about the validity of this study's conclusions, due to the number of important limitations, that this study has

Firstly, the study is based on an incomplete literature review. Namely, the authors mention that there is "limited evidence of the effectiveness and safety of exercise in people with SSc", and that there is "no study that have examined the effects of supervised exercise on aerobic and resistance training". This is incorrect, as at least our group has published three, open-access papers [2-4], dated between 2018-2020 which establish the feasibility and safety of a supervised exercise program consisting of aerobic and resistance training in people with SSc, papers, which also hint elements of effectiveness as well.

Secondly, the study's aim remains generic, exploring the effects of exercise via multiple baseline assessments, rather focusing on the SSc-specific pathology and the pragmatic needs of people with this clinical condition.

Thirdly, the study design itself, presents several limitations: i) The age range is limited between 35 to 65 years excluding thus a significant amount of age groups of people with SSc; this raises ethical as well as applicability questions of the current results. Ii) The applicability and reliability of the results is further challenged by the absence of a control group. Iii) The article notes that the exercise intervention was created based on relevant literature and exercise programs that have been implemented on people with rheumatic and respiratory diseases. However, the included references are not related to any exercise interventions or recommendations of people with rheumatic diseases. We are surprised that your reviewers failed to notice such an important omission. iv) The training intensity and concomitantly the training dose both in resistance and aerobic training seems arbitrary with a large deviation of a 30% (e.g., 50-80% of 1-repetition maximum; 1RM) and 45% (e.g., 40-85% of heart rate reserve), respectively. This challenges the consistency and replicability of the final outcomes. For example, an individual who would perform a resistance exercise at 50% of 1RM would rest two minutes, questioning the aim, effectiveness, and progression of this resistance protocol, supporting this concern on the basic training principles of resistance training[5]. v) Another concern is in relation to the assessment of progression to greater resistance levels, which was assessed by the individual's ability to perform 12 or more repetitions. Common good practice suggests that in order to track progression based on the repetition, there should be a stable resting period and intensity [5]. This did not happen in this study, as the implemented resistance protocol (50-80% of 1RM) suggests.

Fourthly, the selection of 20 minutes walking on the treadmill and 10 minutes on the cycle ergometer totalling to 30 minutes aerobic exercise have not been substantiated based on physiological responses, disease's pathology, and previous literature. The prescribed intensity of 40-85% indicates that some participants were exercised above the anaerobic threshold (AT) and some other below the AT[6]. Different exercise intensities are associated not only with a

shift in blood lactate responses but also with changes in ventilation, oxygen uptake kinetics, and catecholamine responses. For example, constant-intensity exercise within the AT is characterized by a continuous increase in ventilation and VO_2, progressive acidosis, and metabolite accumulation, whereas constant-intensity exercise equal to or below the AT is associated with a physiological steady state. Apparently, the physiological responses have largely varied between participants, questioning the applicability and replicability of the current results in this clinical condition.

Finally, the current study concludes that the supervised exercise training is superior to home-based exercise programme; nevertheless, these two exercise programmes cannot be balanced (e.g., intensity, modality) and therefore are not comparable.

To summarise, the current study: i) has not included recent literature, ii) lacks a clear rationale of specific outcomes, iii) excludes important (for this condition) age groups, iv) does not have a control group v) lacks a specific, training dose that could be replicated, and vi) implements exercise programmes that are not comparable concerning the effects of exercise in people with SSc. Therefore, although we encourage future research clinical trials exploring the effects of exercise in people with SSc aiming to improve the health-related quality of life, we would like to express our concerns on the conclusions, applicability, and replicability of the current study's results.

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