

SUPPLEMENTARY MATERIAL 5

Consensus on Exercise Reporting Template (CERT)

Item 1: Detailed description of the type of exercise equipment

The needed equipment to perform the exercises are:

- Elastic bands (Thera-Band®) with a length of 155cm and a width of 14.5cm. There are six type of bands which, in order from least to most resistant, are as follows: yellow, red, green, blue, black, and silver.¹
- Dumbbells with varying weights from 1kg to 4kg.
- Small size towel.

1. Uchida MC, Nishida MM, Sampaio RAC, et al. Thera-band® elastic band tension: reference values for physicalactivity. *J Phys Ther Sci* 2016; 28: 1266.

Item 2: Detailed descriptions of the qualifications, teaching/supervising expertise and/or training undertaken by the exercise instructor

The exercise instructors will be two physical therapists working at the Hospital Universitario Fundación Alcorcón. They have 4 to 30 years of experience treating patients with musculoskeletal shoulder disorders using therapeutic exercise. All the therapists were provided with a teaching session for the instruction on the exercise program, in aim to standardize the explanations given to the patients, as well as criteria for load progression and regression.

Item 3: Describe whether the exercises are performed individually or in a group

All sessions that patients will receive at the hospital will be performed individually with a 30-minute duration. The patients will attend 5 sessions every other day, and two revision sessions, one at 1-month, and another one at 3 month-follow-up.

Item 4: Describe whether exercises are supervised or unsupervised and how they are delivered.

The abovementioned seven exercise sessions will be supervised at the hospital with a physical therapist. However, the patient will be asked to perform the trained exercise at home all days until three-month follow-up. After that, the patient will be encouraged to keep up with the exercise at least 3-days per week until last follow-up with the medical doctor at 6-month follow-up.

During the supervised sessions, the physical therapist will observe the exercise performance, and correct any compensations made by the patient, ensuring an adequate pattern of movement. Furthermore, the dosage will be modified according to patients' characteristics at each session.

Item 5: Detailed description of how adherence to exercise is measured and reported.

Adherence to the exercise program will be measured using a self-reported calendar, in which the patient should mark the days he/she will perform the exercises. Furthermore, patient's will be asked to rate their pain intensity within last week on Sundays.

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Item 6: Detailed description of the motivation strategies.

In order to motivate the patient to perform the exercises, information will be provided throughout the treatment sessions about his or her pathology and the importance of exercise in his or her recovery. In addition, the physiotherapists will give positive feedback in the face-to-face sessions, with motivational messages, placing greater emphasis on the points well performed by the patients within each exercise and their progress in tolerance to the load.

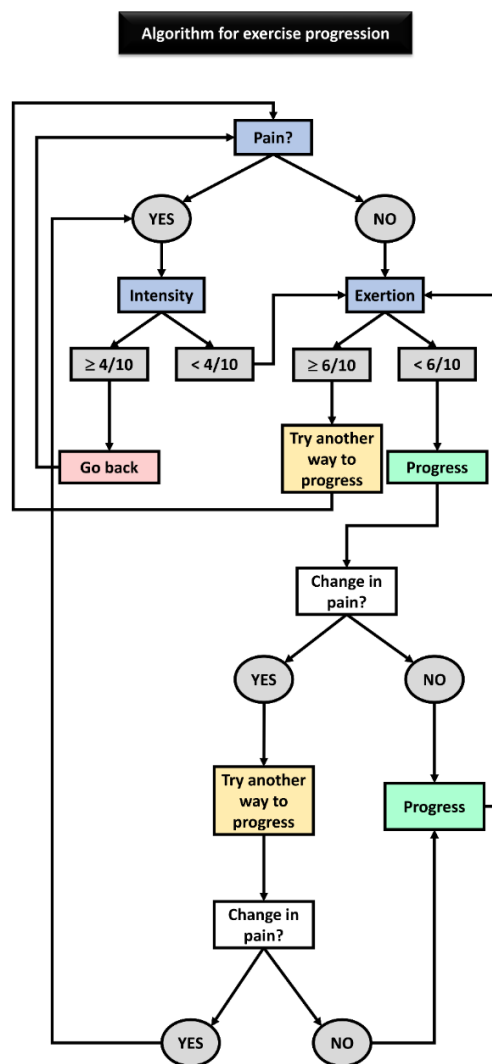
Item 7(a): Detailed description of the rule(s) for determining exercise progression.

Two criteria were used for progression/regression of exercise load: pain intensity and perceived sensation of exertion.

The intensity of pain should be mild during the exercises (i.e., $\leq 4/10$ in a verbal numeric pain rating scale). Furthermore, although there may be a small increase in pain with exercise, it should return to baseline within 2 to 3 hours after exercise.

In addition, the patient should feel a sensation of moderate effort when performing the exercises, with a perceived exertion value equal or greater than 6 in a 0-10 verbal rating scale.

The first criterion to consider is pain intensity, followed by perceived sensation of exertion. If the patient does not have moderate pain within the exercise, and has low perceived exertion, the load will be increased. If, after that, the pain increases, he/she would be asked to return to the initial load. The algorithm of guidance provided to the physiotherapists for the loading profession is presented as follows.



Item 7(b): Detailed description of how the exercise program is progressed (eg, number of repetitions, resistance, load, speed, etc.)

The exercises will start with three sets (unless patient is unable to perform three sets), trying a minimum of 5 repetitions per set. At the beginning of the program, the progression will be made by increasing repetitions up to a maximum of 10 (first three months). Later in the program, the progression will be made by decreasing sets to 1 or 2, with 8 to 10 repetitions, and increasing load (i.e., elastic band resistance or dumbbell weight). Furthermore, at the beginning the exercises will be performed daily, and later in the program the exercises will be performed every other day.

The only exception is the posterior capsule stretching exercise, that will be performed with 3 sets of 20 seconds the entire program, that will be progressed by increasing the tension of the stretching.

Item 8: Detailed description of each exercise to enable replication (eg, photographs, illustrations, video, Smartphone app, website, protocol paper, etc).

The detailed description of each exercise is presented in Supplementary Material 4.

Item 9: Detailed description of any home programme component (eg, other exercises, stretching, functional tasks, etc).

The same exercises trained at the hospital will be performed at home by the patient.

Item 10: Describe whether there are any non-exercise components (eg, training or information materials, education, cognitive– behavioural therapy, massage, etc).

All patients will be provided with an information document with clarifications regarding their shoulder pathology (Supplementary Material 6), and explanations on the importance of therapeutic exercise. Furthermore, all patients from both groups will be provided with a document containing photos and explanation of

the exercise to be performed. Finally, patients will be provided with analgesic drugs if needed.

Item 11: Describe the type and number of adverse events that occur during exercise.

All adverse events will be registered in the patient's medical record during the entire course of the study.

Item 12: Describe the setting in which the exercises are performed.

The face-to-face sessions will be provided at the hospital setting, and the trained exercises will be performed at home by the patients for the entire duration of the study.

Item 13: Detailed description of the exercise intervention including, but not limited to, number of exercise repetitions/sets/sessions, session duration, programme duration, etc.

Exercises will be performed between 1-3 sets and 5-10 repetitions, according to the progression stated in item 7-b. All face-to-face sessions at the hospital will last 30 minutes, with a total of 7 sessions.

Item 14(a): Describe whether the exercises are generic (one size fits all) or tailored.

Exercises will be tailored according to the specifications provided in Supplementary Material 4.

Item 14(b): Detailed description of how exercises are tailored to the individual.

Exercises will be tailored according to the specifications provided in Supplementary Material 4.

Item 15: Describe the decision rule for determining the starting level at which people start an exercise programme (eg, beginner, intermediate, advanced, etc).

At the beginning of the program, patients without range of motion issues will be provided one of the first three exercises programs, while patients with range of

motion difficulties will be provided with one of the last three programs (Supplementary Material 4). Furthermore, subjects with moderate-severe pain intensity will start with the scapular-only programs, while those with mild pain intensity will start with the scapular plus internal rotation program (Supplementary Material 4).

Item 16(a): Describe how adherence or fidelity to the exercise intervention is assessed/measured.

The description of how adherence will be measured is presented in item 5.

Item 16(b): Describe the extent to which the intervention was delivered as planned.

Any deviations from intended intervention will be registered. All data will be analyzed at the end of the study using an intention-to-treat approach.