‘B-FIT’ TRAINING GUIDE

Manual for therapists

Short version

PART 3

2.13 Overview of key points and recommendations.

Physical activity guidelines (2.2).

The level of physical activity in healthy people is determined on the basis of the WHO physical activity guidelines. These guidelines describe the minimum activity level that provides health benefits. For adults the recommendation for aerobic physical activity is: "*30 minutes of moderate intensity aerobic physical activity for at least 5 days per week, or 25 minutes of high intensity aerobic physical activity for at least 3 days per week, or an equivalent combined amount of moderate and high intensity aerobic physical activity"*

Although there are no specific physical activity guidelines for NMD, there are recommendations for adults living with disability. These recommendations are mostly similar to recommendations for healthy adults. If adults with disability are not meeting the recommendations, doing some physical activity is advised. Caution is advised when applying physical activity guidelines to NMD. Generally individuals with NMD have a decreased aerobic capacity due to their muscle weakness, which makes activities relatively more strenuous. Therefore, relative intensity is a better guide for adults with NMD, than absolute intensity (e.g. number of steps per day, or number of minutes per activity).

Optimizing physical fitness (2.3).

With an exercise program, a distinction can be made between maintaining health or optimizing physical fitness. Maintaining health requires physical activities that can be integrated into daily life, while optimizing fitness requires physical exercise. The training guide focuses on optimizing physical fitness through aerobic exercise.

It is not possible to improve physical fitness by means of physical exercise for all individuals with NMD. However, if there is deconditioning due to a sedentary lifestyle, the expectation is that fitness can be improved with physical exercise.

The first important step is therefore to determine whether there is deconditioning due to a sedentary lifestyle, because this partly determines how much room there is for improving fitness. A complete medical history is the basis for this, supplemented with activity questionnaires and possibly with tests to determine the physical capacity (see Section 2.6).

How is improved physical fitness achieved (2.4)?

A number of general exercise principles have been derived from the changes resulting from physical exercise, and these principles also apply to individuals with NMD. The following general exercise principles must be taken into account when designing a physical exercise program: specificity, reversibility, optimal exercise workload, diminishing returns, supercompensation and overtraining.

An effective, individually designed exercise program is designed according to the FITT principle. FITT stands for Frequency, Intensity, Time and Type.

Aerobic exercise for individuals with NMD (2.5).

Although there is still insufficient evidence from high quality randomized controlled studies to draw definitive conclusions, there is increasing evidence that physical exercise is effective for individuals with NMD.

Important problems for practitioners with regard to aerobic exercise in individuals with NMD relate to the needs assessment, the design of the exercise program and the integration of the exercise program into the daily lives of the patients.

Needs assessment for aerobic exercise (2.6).

The needs assessment for physical exercise is based on the medical history, the physical examination and additional testing.

While reviewing the medical history, the need for help is specified and it is determined whether deconditioning due to inactivity underlies the need for help and the functional problems that the patient experiences. With an activity list that takes the relative workload into account (Appendix 1), insight can be gained into the activity level of the patient in relation to current physical activity guidelines. Personal and environmental factors are also specified (including motivation) and whether there are absolute or relative contraindications for aerobic exercise (Table 1).

The aim of the physical examination is to estimate whether the physical capacity of the patient is sufficient to achieve the desired positive exercise effects. Through observation, passive and active measurement of joint mobility and muscle strength testing, insight can be gained into isolated muscle groups and movements. Additional testing is needed for a more complete assessment.

To determine whether the patient is capable of engaging in the intended type of exercise, an incremental submaximal exercise test (Appendix 2) is recommended. A patient is eligible for aerobic exercise based on the B-FIT program if at least the anaerobic threshold is achieved during the submaximal exercise test (Appendix 3).

The most important criteria for making a needs assessment for physical exercise in individuals with NMD are the following:

- There is a specific need for help in optimizing physical fitness.
- There is deconditioning due to inactivity, determined on the basis of the medical history and physical examination.
- The patient is sufficiently motivated.
- There are no contraindications for physical exercise.
- During the submaximal exercise test, at least the level of the anaerobic threshold is achieved.

Determining the exercise intensity (2.7).

If physical exercise is indicated, the exercise program is designed based on the FITT factors. The frequency (F), intensity (I) and time (T) together comprise the exercise volume.

For determining the individual exercise zones, it is recommended to use a submaximal exercise test with increasing load (Appendix 2) in which the anaerobic threshold is determined with breathing gas analysis equipment (directly) and/or the RPE scale (indirectly) (Appendix 3).

Based on the anaerobic threshold, the individual exercise zones can be determined. These are the basis for the exercise program (Appendix 3). Intensities below the anaerobic threshold are considered low intensity exercise zones, intensities around the anaerobic threshold are considered

moderate intensity exercise zone and intensities above the anaerobic threshold are considered high intensity exercise zones.

Designing the exercise program (2.8).

Polarized training programs are characterized by exercising at low intensities for longer periods combined with exercising at high intensities for shorter periods. Although the effectiveness has not yet been demonstrated in individuals with NMD, there are clear indications that such programs are more suitable for the target group than conventional exercise programs, which are characterized by exercise at moderate or high intensities for longer periods.

To design an aerobic exercise program for individuals with slowly progressive NMD, the following FITT factors are recommended:

- *Frequency*: three days a week. Preferably on set days with at least one day of rest between consecutive exercise sessions. If three days is not considered feasible, a frequency of two days a week can also be chosen.
- *Intensity*: low intensity exercise (75%–80% of the total exercise program) combined with high intensity exercise (20%–25% of the total exercise program).
- *Time*: 15 to 40 minutes, depending on the intensity, per session. Increase the duration of the exercise bouts during the exercise program. The total duration of the exercise program is 12 to 16 weeks.
- *Type*: depends on the need for help and the treatment goal. Exercising on an ergometer is preferable.

A calculation tool can be found on the B-FIT website to easily determine the lower and upper limits of the individual intensity zones (i.e. recovery, low, moderate and high intensity) based on the anaerobic threshold obtained during the submaximal exercise test. The calculation tool then generates an exercise program in accordance with the above frameworks.

Points for attention at the start of the exercise program (2.9).

To minimize any unwanted side effects of aerobic exercise, there are a number of points to consider, including the following:

- exercise on fixed days;
- at least one day of rest after every day of exercise;
- keeping an accurate exercise log;
- instructing the patient to contact the practitioner immediately in the event of increased complaints, chest pain and dizziness.

Monitoring and evaluating the exercise program (2.10).

It is important to monitor the following aspects during the exercise program, and to register in the in the exercise log in the patient workbook (Chapter 3):

- the number of exercise sessions followed;
- the perceived exertion of exercise sessions;

- the occurrence of physical complaints after exercise;
- the actual heart rate/RPE score, so that timely adjustments to the program can be made if necessary.

By performing the same submaximal exercise test before and after the exercise program, the effect on physical fitness can be determined (Appendix 5). In addition to an evaluation at the end of the exercise program, it is also recommended to perform a submaximal exercise test halfway through the exercise program (Appendix 2) in order to re-establish the exercise zones based on the anaerobic threshold (Appendix 3), and to modify the exercise program if necessary.

Continuation of exercise after the exercise program (2.11).

Although more research is needed, there are clear indications that more effort is needed to improve physical fitness than is needed to sustain this improvement. It is therefore recommended to continue with two exercise sessions per week. The exercise workload of the final weeks of the exercise program is sufficient.

2.13.1 Overview of care pathway.

The above-mentioned points are included in the flow chart shown below (Fig. 6), which indicates point-by-point which steps must be taken in the care pathway. An ***accompanying instructional film*** is also available on the B-FIT website (https://www.amc.nl/trainingguide) that explains these steps. Five steps are described during the care pathway (from medical history to completion). It is recommended to schedule a contact moment with the patient at every step. If this is not feasible, then steps 1, 2 and 3 can also be combined into 1 or 2 contact moments.

1. Medical history

Goal: mapping out the need for help, treatment goal, degree of deconditioning, personal factors, environmental factors and contraindications.

Action points:

- Medical history, see Section 2.6 for a description of the method.
- Record the need for help and the treatment goal in the training log in the patient workbook (Chapter 3).
- If the activity list is used (Appendix 1), it is recommended to give this to the patient at the end of the first visit and request that it is completed and returned at the next visit.

2. Additional testing: submaximal exercise t

Goal: patient undergoes a submaximal exercise test to 1) determine whether the type of training schedule based on the individually determined training zones, and 3) determine (for training evaluation).

Action points:

- Need for help and treatment goal based on activity list (if provided) and in agreemer
- Physical examination for assessing feasibility of training.
- Identifying any contraindications.
- Patient undergoes submaximal exercise test (Appendix 2).
  - *Complete the **submaximal exercise test score form** (Appendix 5).*

1. Determine whether the type of training (bicycle ergometer, treadmill etc.) is suitable
   - *See Section 2.6.3. for a description of the method.*
   - *Record the type of training in the **training log** in the patient workbook (Chapter*
2. Filling in the training schedule:
   - *Determine the heart rate at the anaerobic threshold (HR at AT) (Appendix 3).*
   - *Determining the lower and upper limits of the individual training zones and the*
     - *The B-FIT website* contains a calculation tool that can automatically gene the training zones and the **training schedule** for the first half of the progra*
     - *Record the heart rates associated with the various training zones in the tr (Chapter 3).*
3. Determine initial level of physical fitness:
   - *On the **aerobic training evaluation form** (Appendix 5), enter the values before t the training program.*

3. Start training

Goal: to ensure that the patient can start the training program.

Action points:

- *Inform the patient about how to train according to the established training schedule (including the use of the heart rate monitor, ergometer), and the importance of updating the training log in the patient workbook.*
- *Discuss usage and adjustment of the ergometer (if used). Record the ergometer settings in the patient workbook (Chapter 3).*
- *Discuss with the patient how monitoring is taking place. Contact patient especially at the start of the program, preferably weekly, by telephone or by e-mail.*
- *Ensure that the patient updates the **training log** in the patient workbook (Chapter 3), and modify the program if necessary.*
- *Schedule a visit for the interim evaluation (halfway through the training program). **Plan this visit after the training program has actually started**.*

4. Interim evaluation

Goal: Have patient undergo a submaximal exercise test in order to 1) check whether the training zones need to be adjusted and 2) determine the physical fitness (for training evaluation).

Action points:

- Discuss the progress of the training program with the patient.
- Have patient undergo a submaximal exercise test (Appendix 2)

1. <u>Training schedule:</u>
   - *Complete the interim **submaximal exercise test score form** (Appendix 5).*
   - *Re-determine the HF at AT. Based on this, determine the heart rates associated with the various training zones (Appendix 3).*
   - *Use the calculation tool on the B-FIT website to determine the training zones and the **training schedule** for the second half of the program.*

2. <u>Determine the level of physical fitness:</u>
   - *Complete the **aerobic training evaluation form** (Appendix 5).*

5. Final evaluation

Goal: Patient undergoes a submaximal exercise test to determine the effect of the training program on physical fitness; evaluate the training program; discuss the follow-up.

Action points:

- Have patient undergo a submaximal exercise test (Appendix 2)

<u>Determine the effect on physical fitness:</u>
- *Complete the **submaximal exercise test score form** (Appendix 5).*
- *Complete the **aerobic training evaluation form** (Appendix 5).*

<u>Evaluating the training program:</u>
- *Discuss the effect of the training schedule on physical fitness.*
- *Discuss the extent to which the treatment goals have been achieved.*
- *Discuss the continuation of the training program (Section 2.12)*

Figure 6. The steps in the care pathway that must be followed.