

# Staying clean

Supporting smoker & ex /smokers in giving up



A GUIDED EXERCISE PROGRAMME FOR STOPPING SMOKING

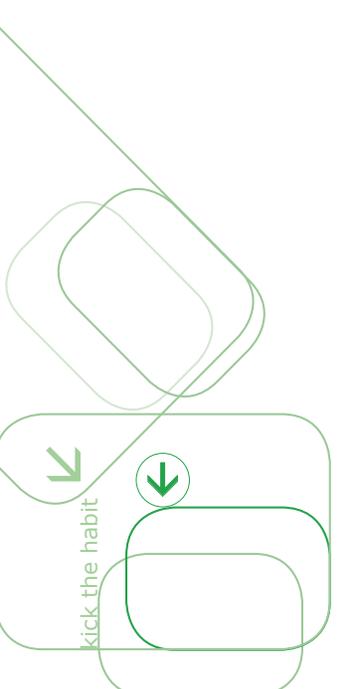


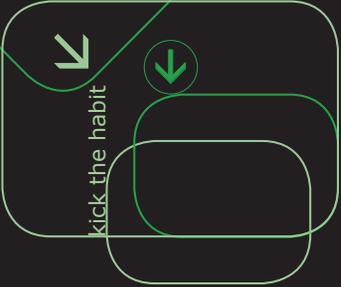
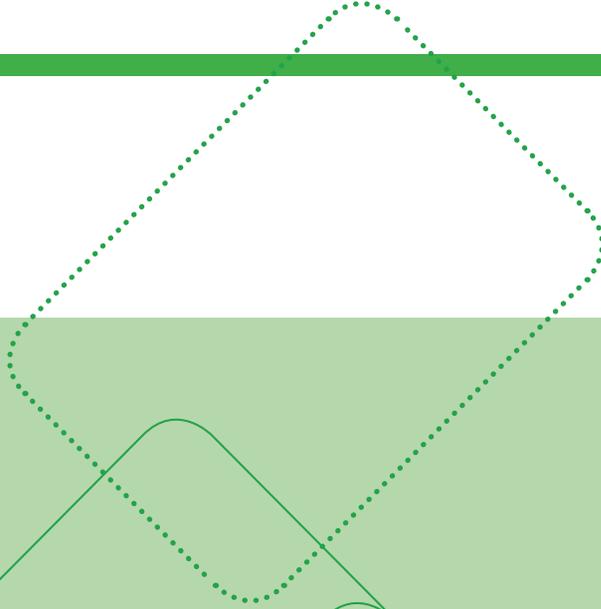
EUROPEAN REGION

World Confederation  
for Physical Therapy



This project has been co-funded by the Executive Agency for Health Consumers under the Public Health Programme 2003 - 2008

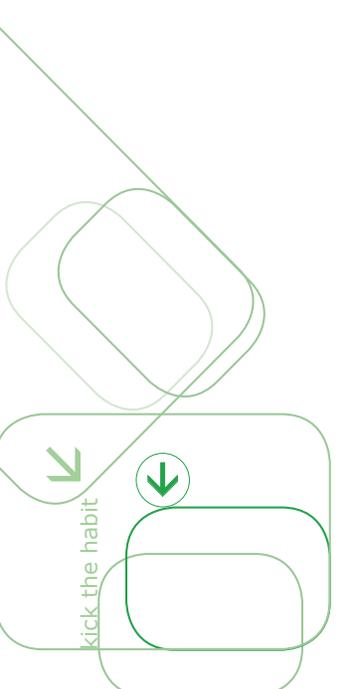




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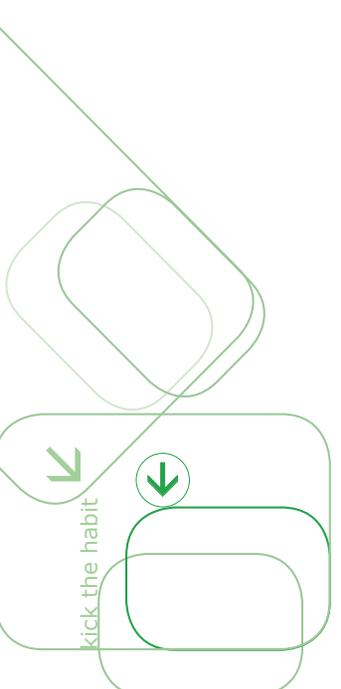
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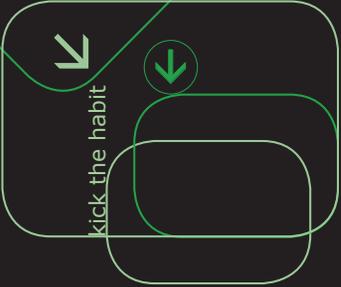
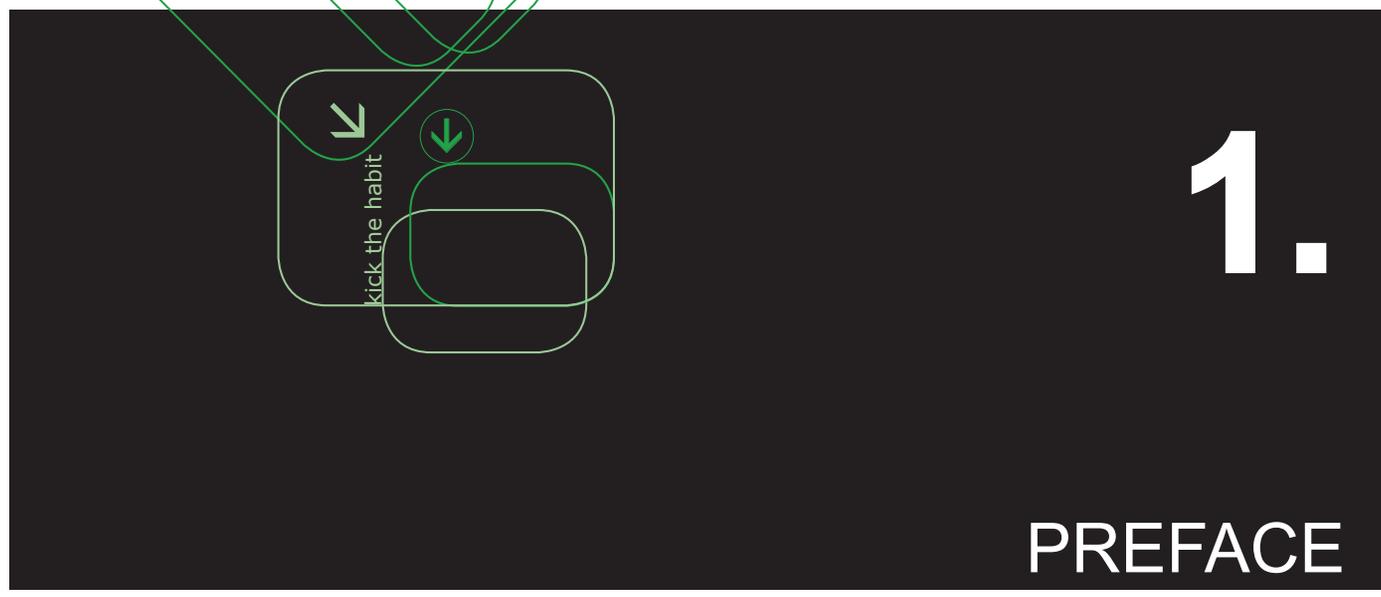
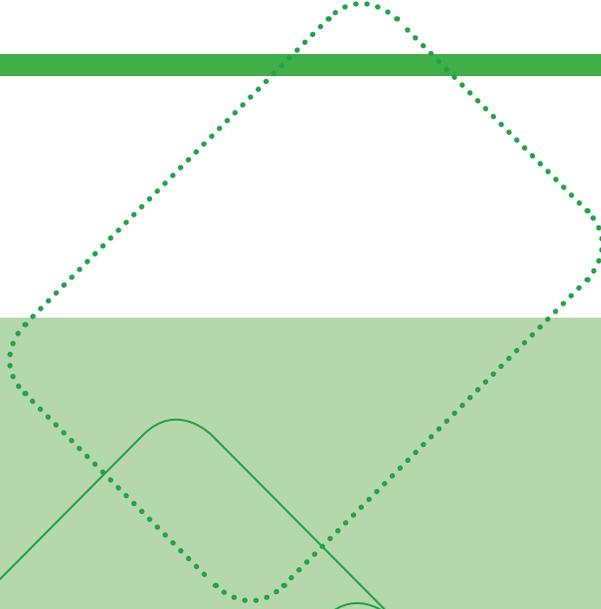
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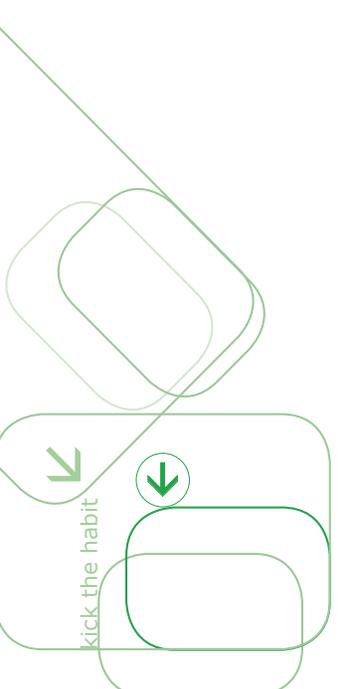
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1.

PREFACE



## PREFACE

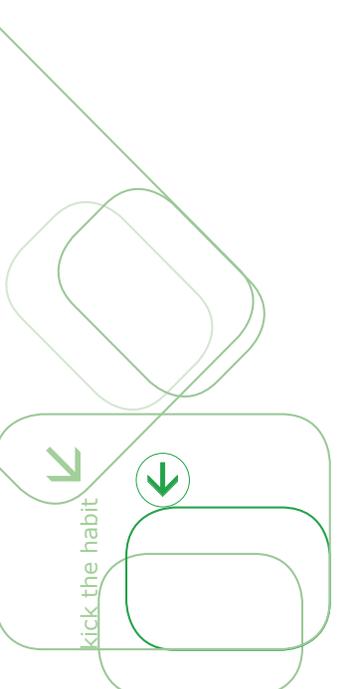
This report summarises the results of the EU subsidised project 'Staying Clean'. The aim of this project was to develop an evidence-based guided exercise programme to be provided by physical therapists which would help specific risk groups in stopping smoking. The management of possible side effects produced by stopping smoking has also been incorporated into the guided exercise programme.

This report gives information for physical therapists on issues relevant to a guided exercise programme for stopping smoking. It sets out several aspects relevant to implementing the guided exercise programme and it forms the basis for home exercise programmes.

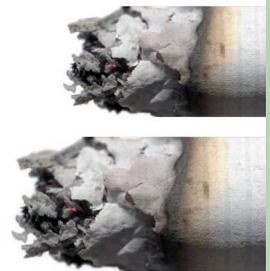
The underlying evidence supporting the development of the guided exercise programme can be found in several reports from the Staying Clean project. These are on the following topics: the evidence supporting exercise as an intervention for use in stopping smoking; the best practice in the field of physical activity and stopping smoking; the evidence supporting the relevant therapeutic aspects of the guided exercise programme; a qualitative study of the aspects of the implementation of relevance to physical therapists, and the evaluation of the monitoring tools available for the guided exercise programme.

The project was carried out under the auspices of ER-WCPT which was represented by both Eckhardt Boehle and David Gorria. The project manager was Philip van der Wees. Project members were Joost Teeuw and Caroline Bastiaenen. The experts and the reviewers of the documents consulted were Michael Ussher, Heidi Anttila and Ana Dimovska Boljevic.

ER-WCPT and the member organisations of ER-WCPT had been consulted on the results of the project Staying Clean during several rounds of consultation, among which was a workshop on the Guided Exercise Programme. We would like to thank all contributors who have helped in the development of the Guided Exercise Programme for their ideas and comments.



Do you still  
find it **sexy**?

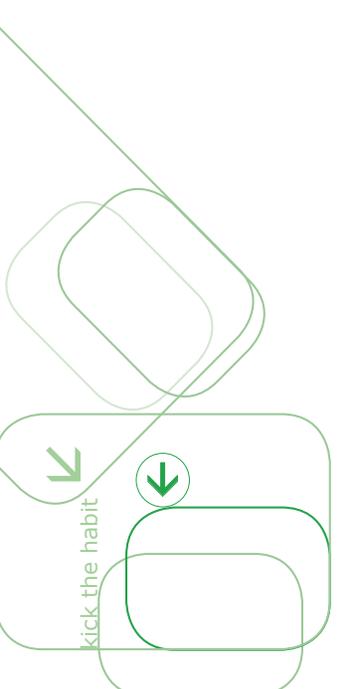


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2.

Smoking: statistics and risks



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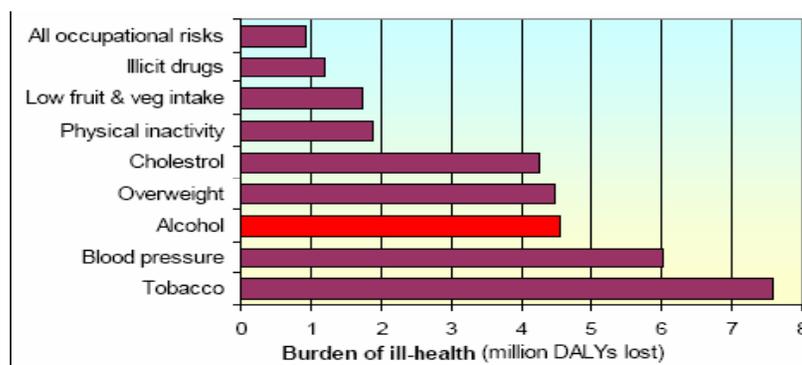


## Smoking: statistics and risks

In Europe an average of between 30 to 40% of the male population smokes, with a distinct difference between the western and eastern parts of Europe: the figure for the former is closer to 30% and the latter closer to 40% and above. Looking at the female population, the average lies between 20 and 30%. The figures for the female population differ between the western and eastern parts of Europe: the former is closer to 30% while the latter is closer to 20% or less. Over recent decades the average number of smokers has slowly declined.

Among young people the prevalence of smoking is around 27 to 30% with a slight increase being shown since the mid 1990s. Among the lower socio-economic groups the prevalence of smoking has remained constant in recent years.

According to WHO<sup>1</sup> in 2004 tobacco was the primary cause of global ill health, followed by blood pressure, alcohol and then obesity.



Significant risks associated with tobacco smoke are osteoporosis, cancer, cerebrovascular accidents, blindness, vascular disease (including peripheral vascular disease), heart attacks, COPD<sup>2</sup>, leukaemia, weakening of the immune system, diabetes, slower healing of wounds and damage to the foetus, or even loss of the foetus during pregnancy.

These figures demonstrate that it is of great importance to help people stop smoking and to prevent people from reverting to smoking.

Many attempts to stop smoking are made on their own without any assistance (e.g. nicotine patches, professional guidance). These unaided attempts have a success rate (more than

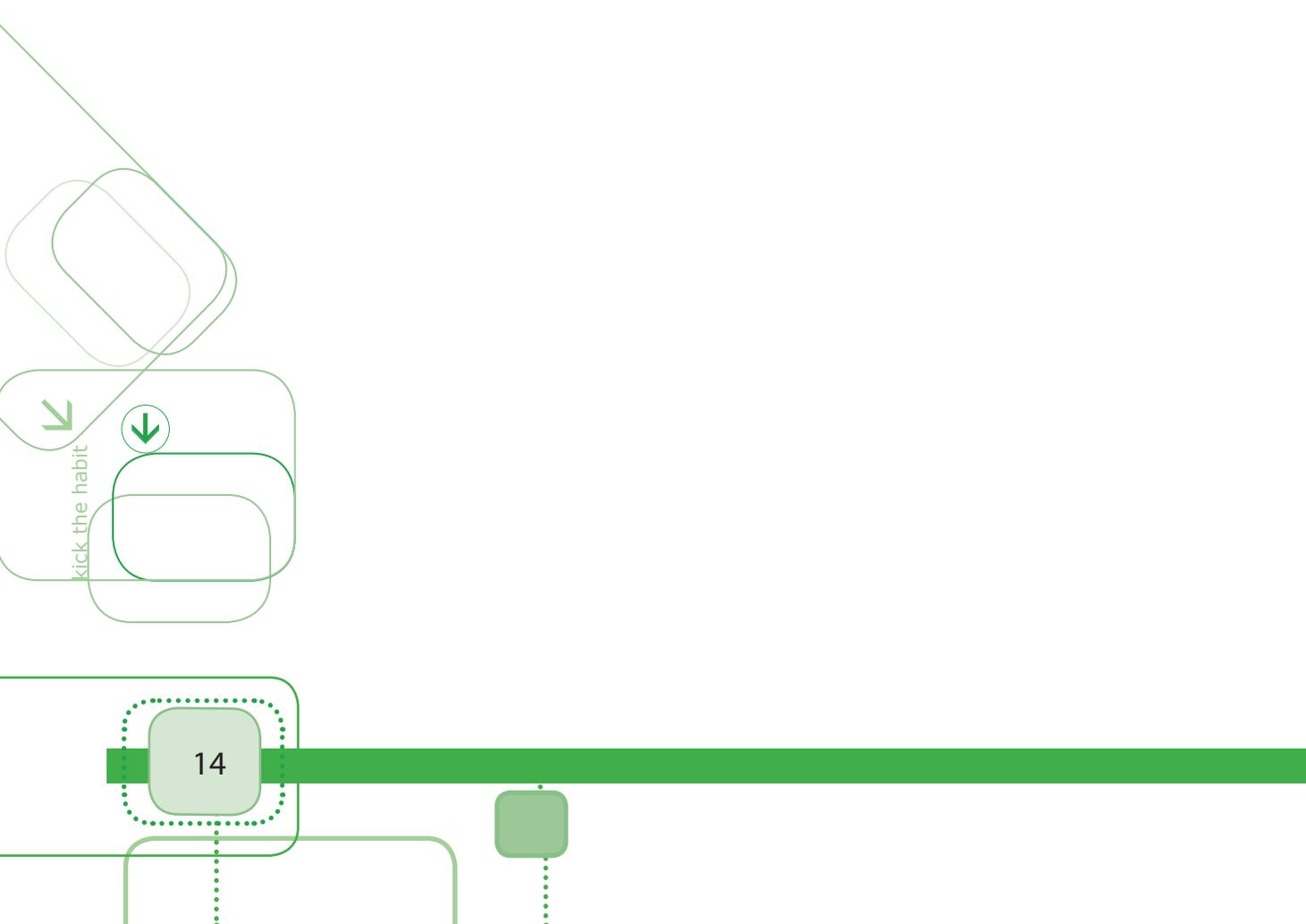
1 World Health Organisation

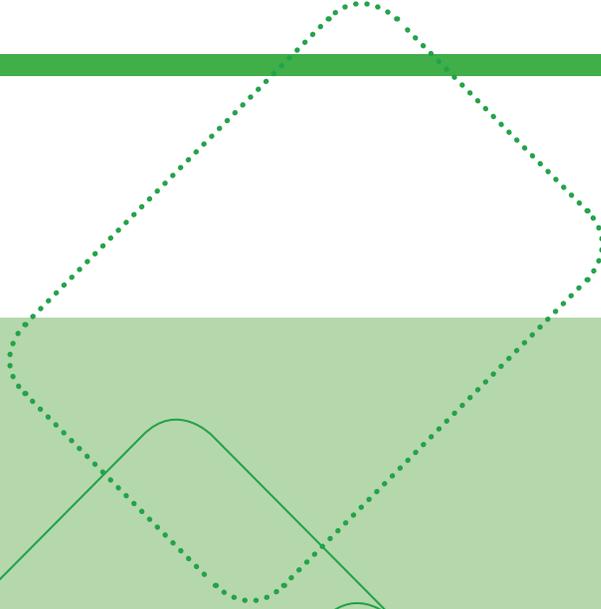
2 Chronic obstructive pulmonary disease

12 months continuous abstinence) of around 2 to 4%. Attempts to stop smoking using some form of assistance have differing levels of effectiveness. For the different methods of stopping smoking the results are between 2 and 13% after a minimum period of 6 months; advice and encouragement has a success rate of between 2 and 5%; behaviour modification therapy 2%; treatment to aid withdrawal (e.g. with nicotine replacement therapy) 11 to 13%, acupuncture 3% and gradual cessation 5%. The effectiveness of methods of stopping smoking is shown to be between 7 and 24% after 12 months; individualised advice 7%, individual counselling 16%, counselling by telephone 7.5%, nicotine replacement therapy between 13 and 20%, bupropion 17% and nortriptyline 24%.

In general more effective interventions are needed to help people stop smoking.

It is estimated that 70% of smokers wish to stop smoking at any one time and certain populations (e.g. pregnant smokers) may also appreciate non-pharmacological aids to smoking cessation.

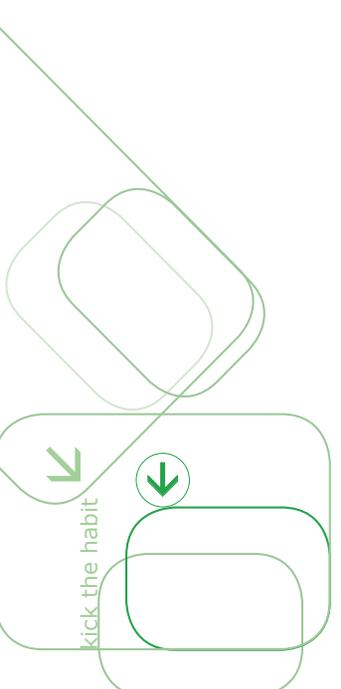




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**3.**

Physical activity:  
its contribution to stopping smoking



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## Physical activity: its contribution to stopping smoking

The term physical activity is used in this report as a broad term. It can be: 1) supervised or unsupervised exercise; 2) activities in daily life, or a broader definition is 3) activities which are performed on a physical level which require exertion by the body.

The term smoking cessation is defined as all methods used by a person to stop smoking; this may be with or without assistance.

Exercise has been mentioned in studies as an aid to smoking cessation. Several studies have also shown that exercise facilitates the management of tobacco withdrawal symptoms (such as depression, irritability and poor concentration) and cravings that indicate a possible smoking relapse. Exercise has also been shown to reduce a gain in weight for up to 2 years following smoking cessation. Weight gain is often mentioned as a reason not to stop smoking, or as a reason to start smoking again. In addition exercise has many other general health benefits for smokers who have stopped.

To collect and combine the most recent available evidence in the area of exercise/physical activity and its contribution to stopping smoking, a systematic review was carried out for the project Staying Clean (for detailed information see the evidence reports on exercise as an intervention for stopping smoking).

This review shows that the effects of exercise have definitely been proved in the short term. Doing exercise reduces both the cravings and the increase in appetite. It decreases the desire to smoke and also reduces tobacco withdrawal symptoms such as depression, irritability and restlessness. Exercise even improves the participants' concentration. The effects are significant and last for up to 50 minutes for persons who have abstained for a short time.

The intensity of the exercises necessary to produce such an effect can vary:

Physical activity reduces cravings both during both intensive activity (at 80% of VO<sub>2</sub> max<sup>1</sup>) and during less intensive activity (e.g. during stretching or isometric exercises).

Longer periods of moderately intense exercise (e.g. 15 minutes at 60 to 85% of maximum heart rate) reduce cravings for up to 50 minutes.

The effects of exercise are similar for both shorter and longer periods of abstinence and also for both moderate and higher levels of baseline cravings.

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1 A person's maximum oxygen uptake during maximum physical activity

The immediate effects of exercise exceed the effects of glucose and oral NRT<sup>2</sup>.

Exercises even tend to demonstrate a more consistent and rapid effect on cravings and withdrawal symptoms when compared with studies of oral NRT. Exercise produces an effect within 10 minutes, while oral NRT takes longer to become effective. The effect does not depend on the person's gender.

The explanation for these effects is not yet fully understood. Distraction and the expectation levels for the therapy do not appear to be the main mechanisms by which exercise reduces the cravings and symptoms of withdrawal.

Current evidence shows that exercise does reduce the cravings by reducing stress (and other negative effects<sup>3</sup>).

*Running, for example, makes it highly probable that the individual will give up smoking and will remain a non-smoker.*

The effects of exercise on smoking cessation in the medium to long term are less clear:

Exercise has a positive effect on the perceived ability to cope, on self-esteem and has less of a negative effect. These factors play an important role in any smoking relapse.

Using a smoking cessation programme which incorporates cognitive behaviour therapy or exercise shows a positive effect on abstinence rates in the medium term.

All these affects are however mainly to be found in females; studies of male smokers are scarce.

The effects of exercise are very positive as long as the coaching and supervision period continues, but as soon as the individual is no longer receiving any guidance the effects diminish.

Due to the scarcity of evidence on the long term effects of exercise as part of a smoking cessation programme, it is difficult to make sound predictions about this. At the 3 month and 12 month follow-ups one study showed that exercise had some effect on the rate of abstinence compared to a control ( $p = 0.05$ ). Another study had a significantly higher abstinence rate for the exercise group compared to a control group at the 3 month follow-up, but not at the 12 month follow-up. In another multi-component smoking cessation programme, exercise plus NRT patches showed a significantly higher abstinence rate at the 12 month follow-up compa-

2 Nicotine replacement therapy

3 A negative emotion or subjectively experienced feeling e.g. anger or rage

red to exercise only.

There is however evidence that exercise reduces a gain in weight for up to two years following smoking cessation. Weight control is an important factor in smoking cessation programmes, particularly for women. This is because weight gain is a motivation to continue smoking and for starting smoking again. Combining exercise with NRT produces even higher abstinence rates: an effect of 27% abstinence after 12 months is shown in inactive female smokers when exercise is combined with NRT. In addition there were positive effects on both the capacity for exercise and the delay in weight gain.

The evidence shows that there are several benefits to people's general health; these emphasise that being physically active is important for both people who have stopped smoking and for those who continue to smoke (e.g. better physical performance, blood composition and body fat composition).

A case-control study showed that smokers who decided to run regularly had high probabilities (50%) of stopping smoking and remaining non-smokers.

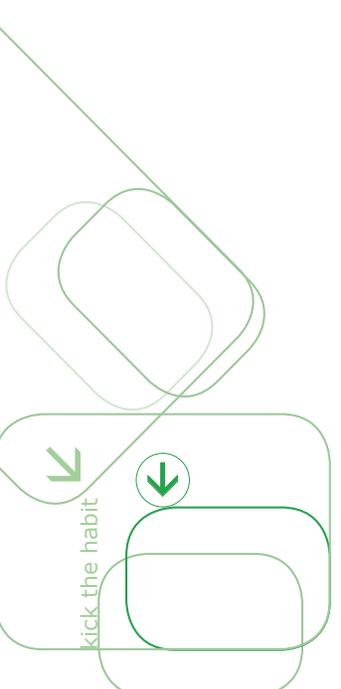
For adolescents there is evidence that high levels of physical activity in both boys and girls reduce the probability that they will start smoking.

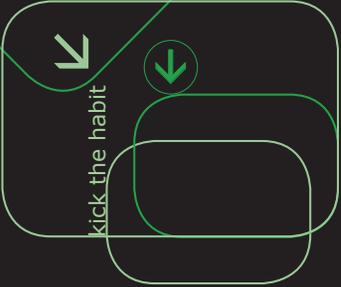
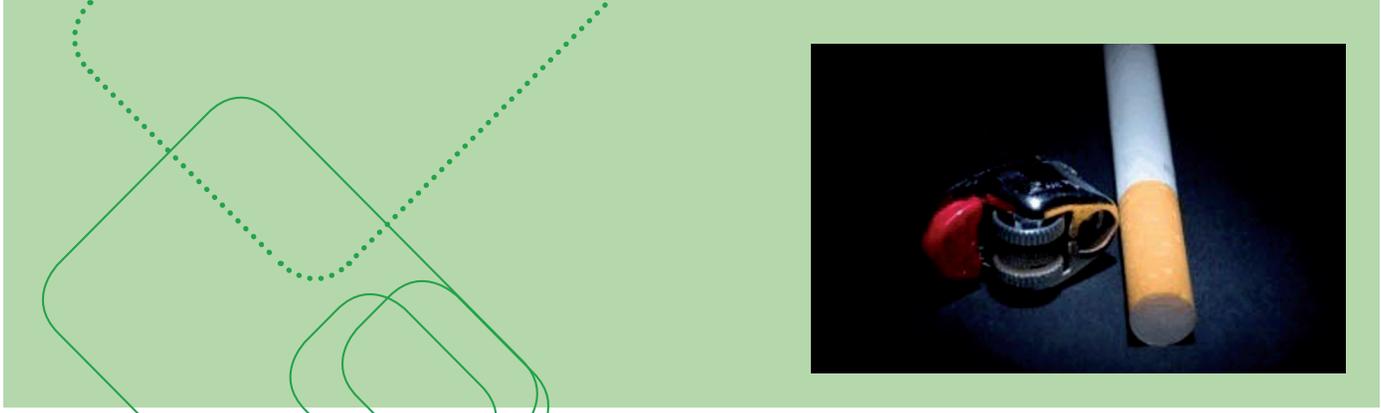
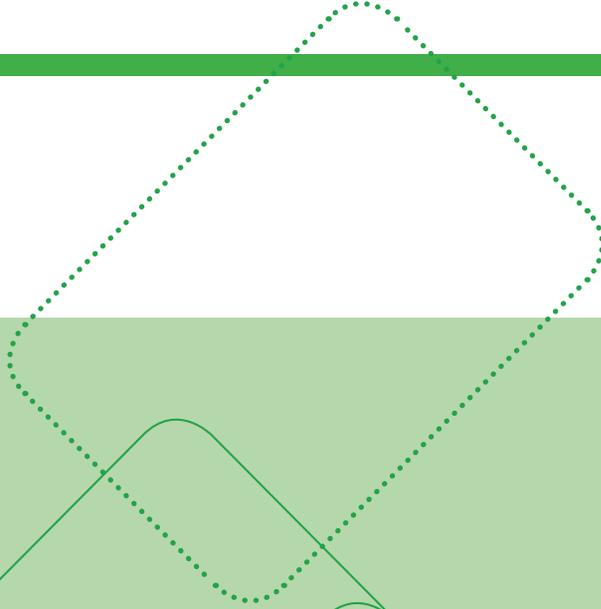
Being physically active therefore improves people's health and at the least helps smokers in their attempts to stop smoking by dealing with the side effects.

These studies provide a good evidence base for using exercise as an additional method of intervention to encourage smoking cessation.

The short term effects of exercise have an immediate positive effect on the relapse factors involved with smoking. These findings demonstrate the positive effect of exercise on smoking cessation. They provide the insight that a multidisciplinary approach including exercise as one of its elements is the most beneficial aid currently available for use in smoking cessation programmes.

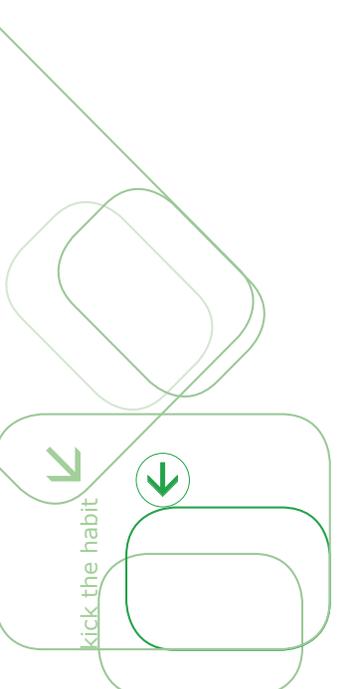
The evidence shows that simply prescribing exercise is insufficient to maintain cessation of smoking. A multi-component programme has the most successful outcome; here behaviour changes and exercise play a key role.





4.

Specimen exercises  
that help in stopping smoking



## Specimen exercises that help in stopping smoking

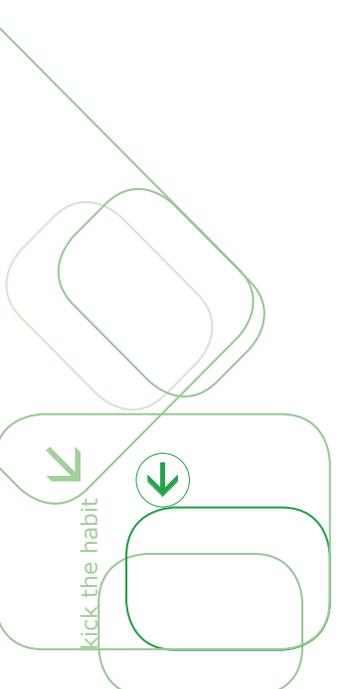
The following statements summarise the evidence and relate it to the development of a guided exercise programme:

- Exercises performed at 40 to 85% of the heart rate reserve<sup>1</sup> (for 10 to 30 minutes) diminish the cravings for smoking and reduce the side effects of smoking cessation. Different physical activities can be prescribed such as: a tread mill, an exercise bike, a step machine, rowing, jogging or swimming.
- Even short amounts of exercise (e.g. walking for 15 minutes) or seated isometric exercises (5 minutes) lower the cravings for smoking compared to taking no action at all.
- Multi-component smoking cessation programmes involving exercise have a higher rate of abstinence at 12 months following a cessation programme that lasted for 12 weeks and with the participants attending for 3 times each week.
- Physical activity during smoking cessation diminishes the negative effects, but has no effect on the positive effects felt by the participants.
- Physical activity within a smoking cessation programme has a particularly good effect on women with concerns about their weight.

The following exercise elements have been proved to facilitate stopping smoking:

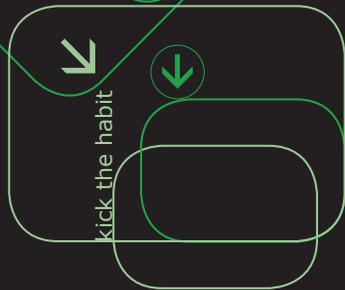
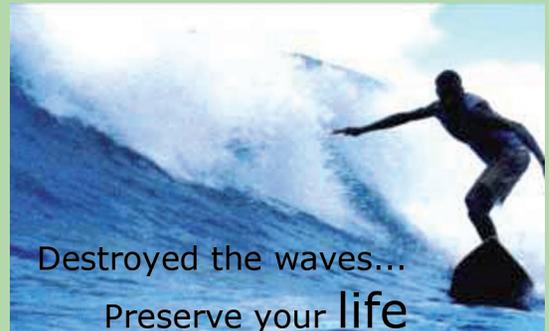
- exercise at 20 to 85% of the heart rate reserve (HRR)  
(HRR= maximum heart rate – rest heart rate / 60 to 85% of the maximum heart rate)
- activities: e.g. rowing, cycling, tread mill, cross trainers (or even isometric contractions)
- a short period of exercise (>5 minutes) may even help
- incorporating nicotine replacement therapy (NRT) / exercise together with cognitive behaviour therapy (CBT) gives the best results
- exercise has a good effect on women who have concerns about their weight. Negative effects decrease together with an accompanying increase in self esteem (the psychological aspect)

<sup>1</sup> This is the maximum heart rate minus the resting heart rate



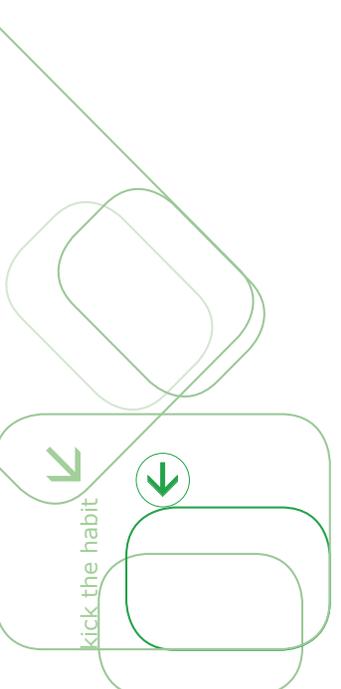
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5.

Who should have help with stopping smoking - particular risk groups?



## Who should have help with stopping smoking - particular risk groups?

It is important to focus the development of a guided exercise programme that facilitates smoking cessation on those groups that will gain the most benefits from stopping smoking. The physical therapist is the health care professional who has expert knowledge of both physical activity and of health care. The current role of the physical therapist in Europe is largely orientated towards the health care of those who already have an illness.

To make use of the physical therapist's expertise and to help those that have the most benefit to gain from a guided exercise programme, the aim is to develop a guided exercise programme which will benefit specific groups who are at risk from smoking and who are also currently receiving treatment from a physical therapist. Although this places the guided exercise programme more in the area of curative health care and secondary prevention (preventing patients from developing further harm to their health), this is no reason to expand the range of preventive work undertaken by physical therapists in the future. However, there is not sufficient evidence about which physical activity can contribute best to the prevention of a person from ever starting smoking. The evidence that is available is mainly concerned with smoking cessation, with preventing someone going back to smoking and with reducing the health risks associated with smoking.

This current guided exercise programme will be developed for physical therapists to incorporate into their work. It will have a profound impact on the prevention of smoking-related illnesses in patients who are already receiving treatment from a physical therapist.

Significant risks associated with tobacco smoking are found with:

- COPD (tobacco consumption is a factor in slightly less than 50% of cases of COPD)
- Cancer in one or more parts of the respiratory system (tobacco consumption is related to slightly more than 50% of tracheal, bronchial and pulmonary cancers)
- Cardiovascular diseases: cerebrovascular accidents, heart diseases, vascular diseases (including peripheral arterial diseases)
- Osteoporosis
- Diabetes
- Pregnant women

- Patients with severe mental illnesses
- Patients with dementia and experiencing cognitive decline
- Patients undergoing an operation
- Further characteristics of people who smoke are a weakening of the immune system and wounds that are slower to heal.

Various studies on health-related issues concerning the risk groups mentioned above specify the need to stop smoking and to increase the amount of physical activity.

For patients who smoke and who have chronic obstructive pulmonary disease (COPD) smoking cessation is the most important method of treatment.

Smoking cessation is one of the key aspects in risk factor modification for people suffering from peripheral arterial disease (PAD); the benefits of supervised exercise programmes have been identified and should be an important form of therapy for patients with PAD.

The most effective preventive measure for patients suffering from coronary heart disease is to stop smoking. With physical training added to the therapy both cardiac mortality and the overall mortality are reduced.

Smoking is considered to be a major risk factor for the development of osteoporosis.

There is a relationship between active smoking and an increased risk of type 2 diabetes. There is evidence that physical activity protects against cancer of the colon and endometrial cancer. In addition it probably protects against breast cancer, lung cancer and cancer of the pancreas.

Smoking during pregnancy increases the risk of preterm births and foetal growth disorders. Adding physical activity to a smoking cessation programme will provide help to people with severe mental illnesses who are trying to stop smoking. This is interesting because smoking and physical inactivity are both highly prevalent among these individuals. Smoking has a negative effect on both dementia and on cognitive decline.

Smokers have a substantially increased risk of intra- and post-operative complications. Pre-operative interventions to stop smoking reduce these risks.

A forthcoming observational study on female participants reveals that both the additional risk of smoking-related diseases and the increased mortality rate were both rapidly eliminated when the participants stopped smoking. In the first 5 years the risk of these diseases may fall by 60% (e.g. vascular mortality).

In addition to these studies the knowledge and practice of physical therapists practising in Europe has been used to focus on specific risk groups. A questionnaire was sent to ER-WCPT members asking them to make an inventory of guidelines concerned both with stopping smoking and with the risk groups mentioned above.

Guidelines used in Europe which combine smoking cessation strategies with physical activity have focussed the use of guided exercise programme on the following risk groups:

- COPD / asthma
- Osteoporosis
- Cardiovascular disease
- Diabetes

The specific exercises to be used are summarised below.:

#### COPD/asthma components

##### Exercise:

- Aerobic and anaerobic exercise to improve the functioning of the lungs
- Muscle training
- Stopping smoking using cognitive behaviour therapy (ask, advise, assess, assist, arrange)
- 3 to 5 times per week for 30 minutes (American College of Sports Medicine)
- Intensity: Borg scale - from 5 - 6 to 10
- Programmes should last for at least 8 to 12 weeks
- Programmes should last for at least 8 to 12 weeks

##### Disease issues:

- Level of FEV1 (volume of forced air expired in 1 second) determines level of entry for the exercises
- Watch out for any excessive weight loss

### Osteoporosis components

#### Exercise:

- Balance / weight bearing aerobic training / strength training (70 to 80% of 1 RM (repetition maximum test)) / impact exercise (stepping, jogging, skipping) / falling techniques
- 3 to 5 times per week for at least 30 minutes
- At least 9 months of training to produce results (stopping training means a loss of the benefit gained)
- Obesity increases the health risk.

#### Disease issues:

- The state of the osteoporosis determines the level of exercise

### Cardiovascular components

#### Exercise:

- Aerobic exercise of moderate intensity (brisk walking, jogging, cycling)
- Muscle training
- An example of an exercise session: warming up for 15 minutes, 20 to 30 minutes aerobic exercise, warming down for 10 minutes.
- 3 to 5 times per week for 30 to 60 minutes
- Once weekly group exercise with two equivalent home-based sessions is as effective as three hospital-based sessions
- Borg scale or pulse monitors intensity: Borg 11 to 16 or 40 to 85% HRR
- Long term maintenance of physical activity is necessary

#### Disease issues:

- Patients in general have low levels of physical activity
- Artificially lower heart rate (due to medicine e.g. beta-blockers)
- Psychological aspects should also be addressed (exercise anxiety, depression, pain management)

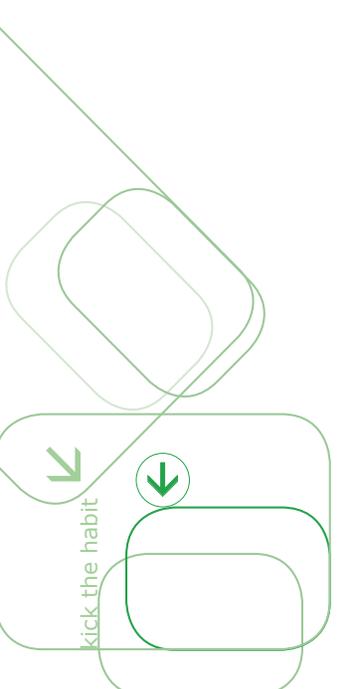
## Diabetes components

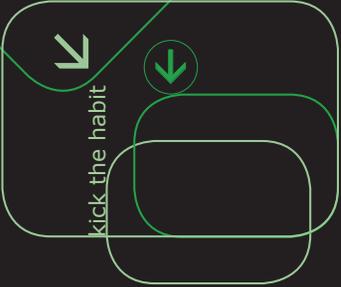
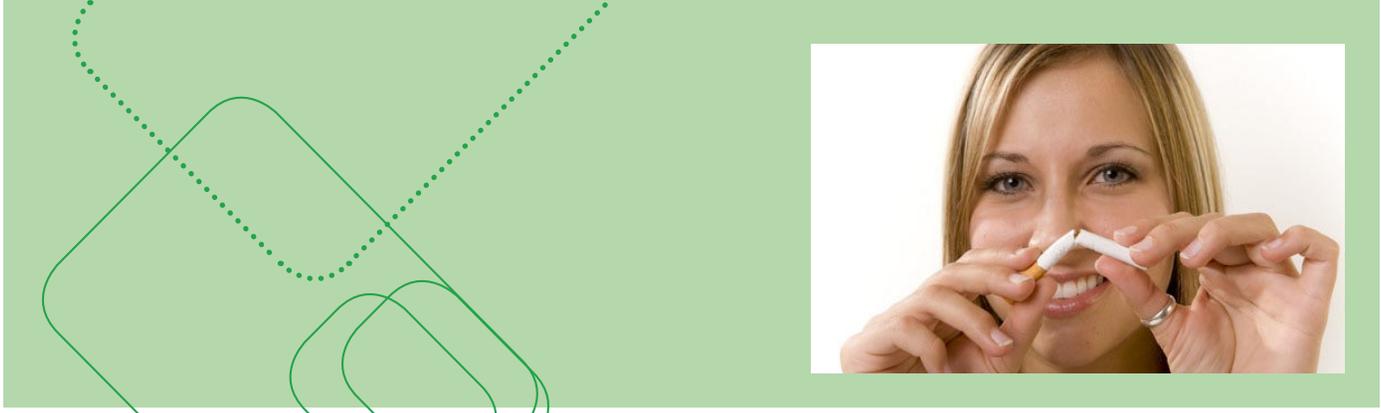
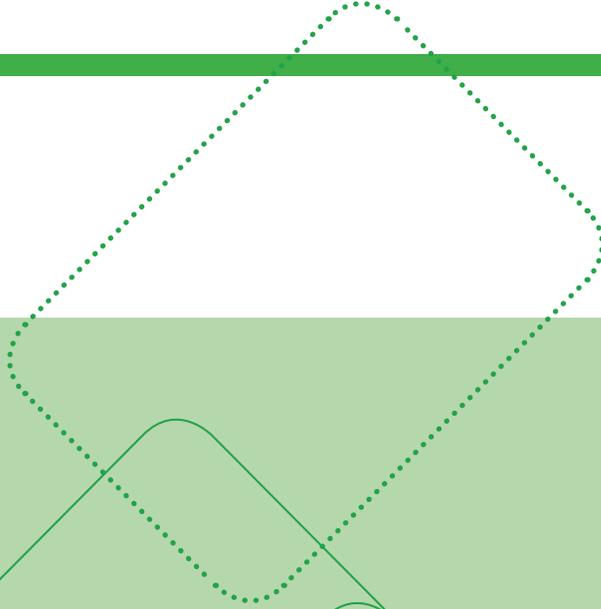
### Exercise:

- Aerobic and resistance training exercises
- Sessions: Start for 20 minutes at >50% heart rate and increase the heart rate to 75% in the next 20 minutes
- Individually tailored exercises and guidance including glucose management
- Home-based programmes with ongoing support on cognitive behaviour therapy and stage of change
- On a regular basis (> 3 times/week)

### Disease issues:

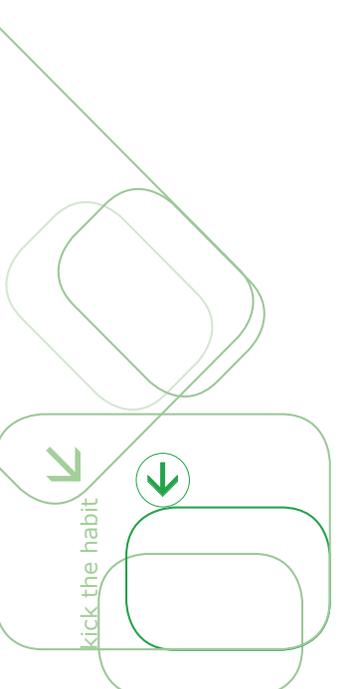
- Watch out for high/low glucose levels during exercise
- Weight management is important (weight loss/gain)
- The level of entry should vary depending on the management of the diabetes





6.

The physical therapist's role



## The physical therapist's role

For the development of a guided exercise programme it is important to realise that smoking is an addiction which forms a part of an individual's lifestyle.

On the one hand there are physiological aspects that affect the psyche of the individual who is stopping smoking. On the other hand smoking is a part of an individual's routine: getting up with a cigarette, coping with stress, possibly handling a weight problem, etc. This means that the changes in the biology, psychology and social surroundings of an individual need to be addressed during the attempt to stop smoking. The expert supporting the individual should take all these aspects into consideration when giving advice.

To be more specific the person will need to find other ways of doing things, and may even find that changing aspects of his or her immediate environment will also need to take place to have lasting effect (e.g. the people the individual comes into contact with).

For this reason the incorporation of aspects of behavioural therapy are essential for smoking cessation and a guided exercise programme will facilitate this. Exercising can play a role in maintaining a change of behaviour. This is because exercising has an effect on tobacco withdrawal symptoms and on the severity of the desire to smoke. Studies have shown that this severity of the craving to smoke reliably predicts any relapses in smokers who are trying to stop.

Evidence also shows that the effects of guided exercise programmes are very positive during the period when the participants are receiving guidance. After the end of the guidance period a proportion of the participants relapse into smoking. One contributory factor is that the participant who relapses has not undergone a change in behaviour sufficient to exclude smoking from his or her lifestyle. On many occasions only one aspect (e.g. exercising) has been dealt with by the programme, but the programme has not dealt with the overall patterns of behaviour and with the cognitive understanding of smoking cessation.

Within a physical therapy setting these findings are highly relevant for chronic patients e.g. COPD and CHD patients. Not only do these patients receive the guidance for a longer period, but the programme also needs to help them change their overall behaviour. This can be achieved by looking at the psychological and social sides of the individual as well as the physical activity that the individual undertakes.

A study conducted on several physical therapists was carried out to determine, qualitatively what physical therapists thought about the implementation of a guided exercise programme for stopping smoking. The main points recommended for the successful implementation of the

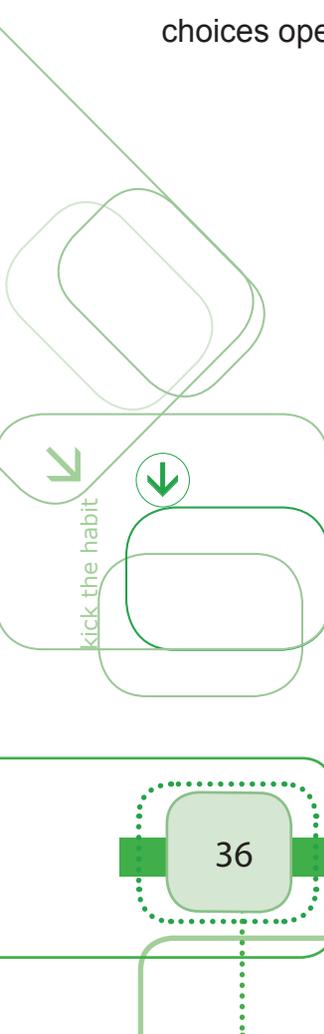
programme were that a good knowledge base about smoking and about how to stop smoking needs to be provided (e.g. about the side effects and the different therapies available), that tools for the guidance in changing behaviour need to be provided and that practical examples of guided exercise programmes are to be given.

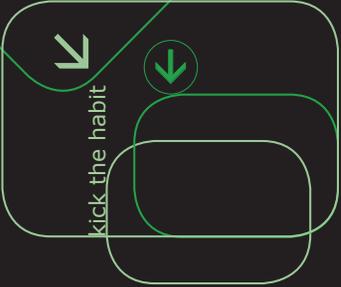
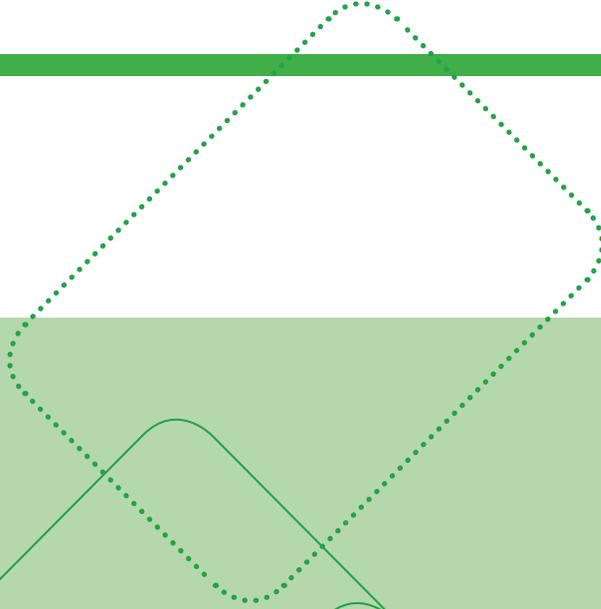
The time frame over which the effects are to be measured will be in the short, medium and long terms. The short term period means directly after the exercise intervention and within a few days of the 'stop smoking' day. The medium term period is from a few days after stopping smoking to 12 months afterwards. The long term period is defined as 12 months or more after stopping smoking.

This classification into short, medium and long term is essential for the quantification of the smoking cessation programmes. 12 months' abstinence from an addictive agent is generally considered to be an effective abstinence. The probability of a relapse after such a long period of abstinence is very small.

It appears that the main problem in stopping smoking is not relapse at a later stage, but rather the problem lies in initiating a period of abstinence: that is the first week after the stop smoking date. For this reason it is important to pay close attention to effects which become apparent during this short period of time. Another argument for the measurement of short term effects, and specifically any acute or immediate effects, is that there is strong evidence that exercise supports the management of the acute effects of stopping smoking.

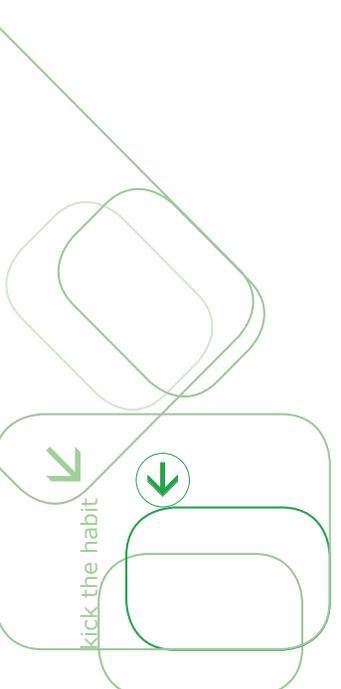
The measurement of medium term effects is important, because this is the period when the individual needs to change his or her lifestyle and habits. Numerous factors influence the choices open to an individual during this period of time. .





7.

A guided exercise programme for stopping smoking



## A guided exercise programme for stopping smoking

The guided exercise programme not only focuses on specific risk groups; it also needs to incorporate elements concerned with smoking cessation. The following are relevant to the guided exercise programme:

- evidence of physical activity/exercise as a contribution to smoking cessation
- a level of physical activity/exercise which contributes to smoking cessation
- application to specific risk groups (which participants gain the greatest health benefits from smoking cessation and physical activity?)
- patient characteristics:
  - stage of the disease
  - gender
  - age
  - level of physical activity
  - willingness to participate
  - degree of social support
  - number of cigarettes smoked
  - period as a smoker and when the smoker began to smoke
  - weight/BMI
  - previous attempts to stop smoking
  - level of highest educational qualification
  - economic situation (employment)
- expert support
  - type of health professional
  - aids to support: telephone, computer, brochures
- setting: at home or in the health professional's practice

The first 3 items have been discussed previously. The patient characteristics, expert support and the setting will be described in the following section.

## Patient characteristics

It is important to tailor the guided exercise programme to the specific individual characteristics of the person who wants to stop smoking.

The stage of the disease is important: the patient's motivation, and also his or her exercise capabilities differ dependent on the stage of the disease

The gender is also important: females are more influenced by external pressures, while males tend to be more individually orientated.

Age: young people tend to consider that they are very able to stop smoking themselves, while older people tend to seek more help.

Level of physical activity: to change a sedentary person into adopting an active lifestyle requires more motivation than for a person who is already active.

Willingness to participate: the individual's own intrinsic motivation is important in determining the way to approach, motivate and support that individual. For example, continuing to smoke after experiencing health problems (e.g. myocardial Infarction) is found to be associated with broader health risks (refusal of medication, a negative attitude towards changes). Another example is related to the smokers' perceptions of risk: they tend to be unrealistically optimistic in terms of the risks of cancer. They estimate that there is a 200% increase in risk, when there is in actual fact a 900 % increase in the risk of lung cancer. They also think the risks can be reversed by exercise or by vitamins and that the risk of getting cancer is purely based on genetics.

Degree of social support: the people surrounding the person stopping smoking have an effect which is not to be underestimated. For example, if smokers remain in their everyday environment it is more difficult for them to stop.

The probabilities of stopping smoking are also decreased by: being overweight, smoking a large number of cigarettes, being a smoker for a longer period of time, having positive opinions about smoking, practising less health-promoting behaviour (e.g. less physical activity), having a lower standard of education, having a low income, the effects of previous attempts to stop smoking and, most important of all, having low self-confidence.

## Expert support

The physical therapist has several tools which he or she can use to facilitate the attempt at stopping smoking. Cognitive behaviour therapy is concerned with the support and motivational sides of stopping smoking. These are:

1. **Ask** about tobacco use
2. **Advise** to stop
3. **Assess** the willingness to make an attempt at stopping smoking
4. **Assist** in the attempt to stop smoking
5. **Arrange** for a follow-up and arrange for relapse prevention

Recommendations to enhance the patient's motivation to stop:

1. **Relevance:** why should you stop?
2. **Risks:** what are the risks of smoking?
3. **Rewards:** what are the benefits of stopping smoking?
4. **Roadblocks:** what prevent people from stopping smoking?
5. **Repetition:** continue to motivate and continue to intervene

These 5 'A's and 5 'R's are crucial in guiding the patient in his or her attempts to stop smoking and in raising the motivation of the person stopping smoking. These ideas form a basis which can be successfully used to change behaviour.

In addition to the motivational aspects, the physical therapist should help the patient have more control over the effects stopping smoking has on his or her body and explain the possible withdrawal symptoms. The therapist should also inform the person about support groups in the local area and encourage the patient to discuss the attempt to stop smoking with other people. Increasing the level of social support is particularly useful in increasing the numbers who stop smoking.

Active counselling can further increase the rates of people stopping smoking. For example, the more telephone calls a health professional makes with people stopping smoking, the higher the overall rates of stopping smoking; there is a dose-response relationship.

The use of tools to support people stopping smoking is successful when these are tailored to

meet the needs of the individual (e.g. computer programmes). General information in brochures however produces no more success in stopping smoking than advice given by a health professional.

Whether or not these two particular changes in behaviour, becoming more active and stopping smoking, should be dealt with sequentially or simultaneously is not clear from the literature. There are some studies which advocate first becoming more active and then stopping smoking. However, there are also studies which state that changing several aspect of people's behaviour at once has a higher rate of success than sequential changes in behaviour.

It is however clear that stopping smoking first and then becoming more active later does not produce better results. This is because the physical activity is needed to support the patient with the withdrawal effects in the first week of stopping. Commencing the physical activity at a later stage therefore makes no contribution to the attempt to stop smoking.

The preferred method is therefore to either first start the physical activity component followed by stopping smoking, or to start both components together at the same time.

The following two elements have little to no effect on stopping smoking: risk assessment feedback (i.e. explaining the risks) and competitions between individuals involved in stopping smoking. With risk assessment feedback this can be related to smokers' unrealistic perceptions of risk and to their tendency to filter information so that it matches their own ideas about possible health risks. Regarding competitions there is only a short term effect which wears off as soon as the competition is over (the individuals have undergone no changes in behaviour and then revert to smoking).

## Setting

No significant difference has been found between exercising in a health centre or at home when the home-based rehabilitation consisted of a structured programme complete with monitoring and follow-ups. The combination of group therapy and individual counselling has the highest potential for helping people to stop smoking.

## Practical implementation: the questionnaire

In the appendix a questionnaire can be found which incorporates the theoretical aspects dis-

cussed previously. It can be used to help the physical therapist in constructing a tailor-made guided exercise programme. It can be used following the patient's first visit and for monitoring of the progress of the patient during therapy.

- To summarise all the previously mentioned items: guided exercise programme should address the following issues:
- Best practice: literature and questionnaire
- They should be specifically for the risk groups concerned
- Patient characteristics
- Expert support
- The setting

The focus will be on the people suffering from COPD, osteoporosis, cardiovascular diseases and diabetes.

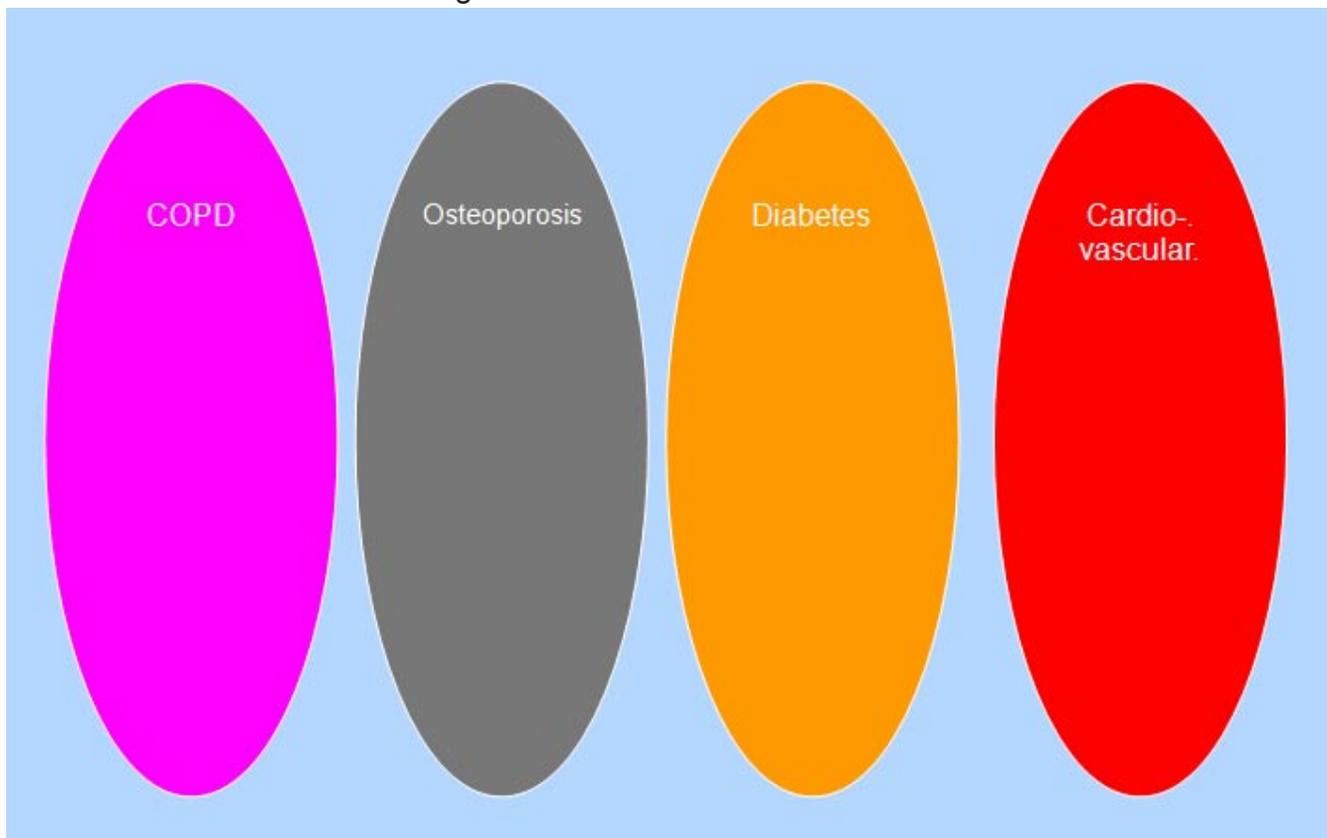
The guided exercise programme has four different levels. Each level demands a more intensive guided exercise programme. One or more levels of the guided exercise programme can be implemented depending on the organisation of physical therapy within the health care system of a country. This also depends on the skill of the physical therapist, the needs of the patient and his or her willingness to co-operate.

The following levels are used in the guided exercise programme for stopping smoking:

- Generic: the use of exercise in stopping smoking is generally advertised, making it clear that exercising helps to combat the side effects of smoking and increases the patient's health
- Basic: physical therapy is added to the treatment of patients with COPD, osteoporosis, diabetes or cardiovascular disease. The focus is on informing patients of the effects of smoking and presenting them with the means to stop smoking (for example, giving them advice on exercise).
- Plus: actively motivate the patient to stop smoking, taking time to advise and carry out exercises with the patient. Agreements will also be made with the patients which will be followed-up later. This means implementing the 5 'A's and 5 'R's.
- Complete: A multidisciplinary approach in which all the health professionals involved (e.g. specialist, dietician, physician etc.) inform each other about initiatives for stopping smoking and at the same time keep the patient informed as well. Motivational

interviewing techniques are also integrated into the physical therapy.

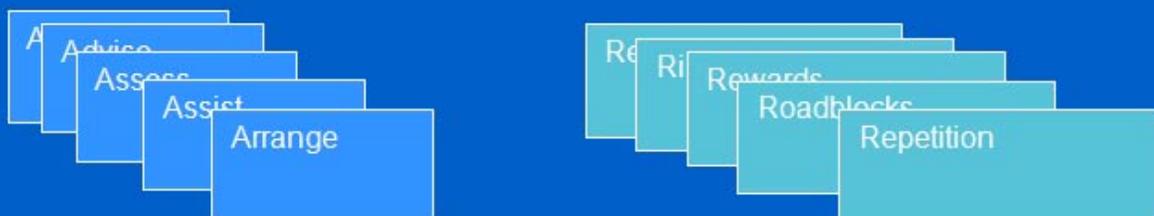
### The Guided Exercise Programme



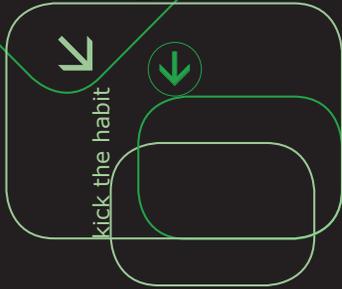
### Aspects of stopping smoking



### Behavioural aspects

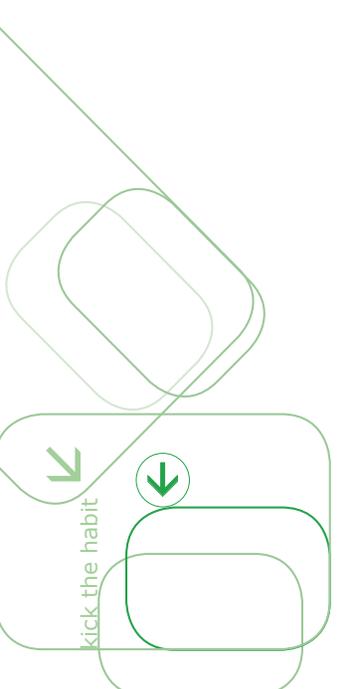


kick the habit



8.

How can I put the guided exercise programme into practice?



## How can I put the guided exercise programme into practice?

It is important to realise that stopping smoking is a change in lifestyle. It is not something that is easy to do and easy to maintain. A lot of aspects relevant to giving up smoking such as the level of physical activity, the weight of the patient, the level of social support, etc. have an impact on the probability that a person who begins to stop smoking will remain a non-smoker

The probability of reverting to smoking is highest within the first week: with 49% to 79% reverting to smoking, this is indeed a critical period!

In the longer term the individual will have to cope with changes in behaviour related to smoking (for example, not having a cigarette after dinner) and generally becoming more active. Only by maintaining certain changes in his or her behaviour will the person be able to continue to refrain from smoking.

It is therefore important to highlight these two periods in the guidance for people who are stopping smoking.

.In the short term it is important to motivate the person giving up smoking and to help him or her combat the side effects. It should be made particularly clear that it is important to do exercises like walking or cycling in the morning. To stop the person giving up from returning to the usual habits, it is also important to mention that a change in smoking-related habits is necessary. For instance, when a person smokes while drinking coffee in the morning, then the person could refrain from drinking coffee or the person could drink coffee in different surroundings. These points can be mentioned in the first, or one of the first sessions with the person giving up. The use of the 5 'A's and 5 'R's can assist both the physical therapist and patient.

In the longer term it is important to give positive feedback on the attempt to stop smoking. Even if the person does revert to smoking, tell the person concerned that this does not mean that the attempt is all over; this can happen and it is important to learn from it. The improvement in one's self-esteem is vital and it is important to create a social network of supportive people surrounding the person giving up. The use of an exercise group at first in the setting of a health centre, and later in a more local setting is therefore important. Occasional one-to-one sessions, or short talks with the other people giving up smoking help with the individualised aspect of giving up smoking.

The use of various aids e.g. computers or useful telephone numbers can be very useful as long as these can be tailored to meet the person's needs.

In addition to patient orientation the guided exercise programme needs to have a component involving a physical therapist. A qualitative study among physical therapists has shown that physical therapists also need to be provided with assistance and guidance when delivering guided exercise programmes to smokers who want to stop.

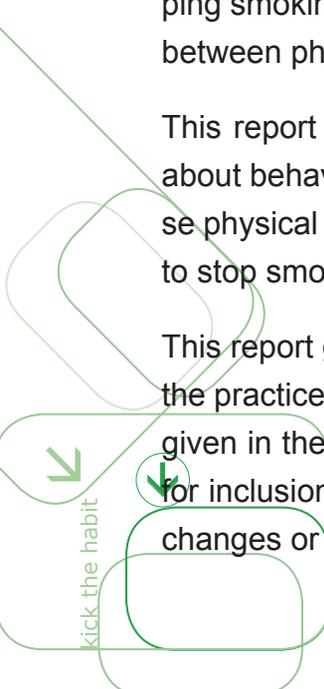
The activities currently practised by physical therapists incorporate hardly any of the conditions necessary for stopping smoking. When physical therapists are asked how they will deal with a guided exercise programme for stopping smoking, they say that they find it hard to initiate this kind of guided exercise programme. According to the physical therapists the nature of the problem lies in the need for more knowledge about developments in behavioural therapies and especially in motivational therapies. To help patients stop smoking physical therapists also needed better knowledge about smoking, about aids for stopping smoking and about withdrawal effects caused by stopping smoking. They intend to use their national physical therapist organisations to try and find the necessary information to support them.

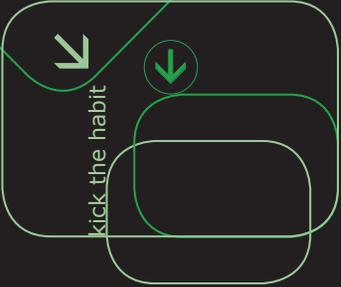
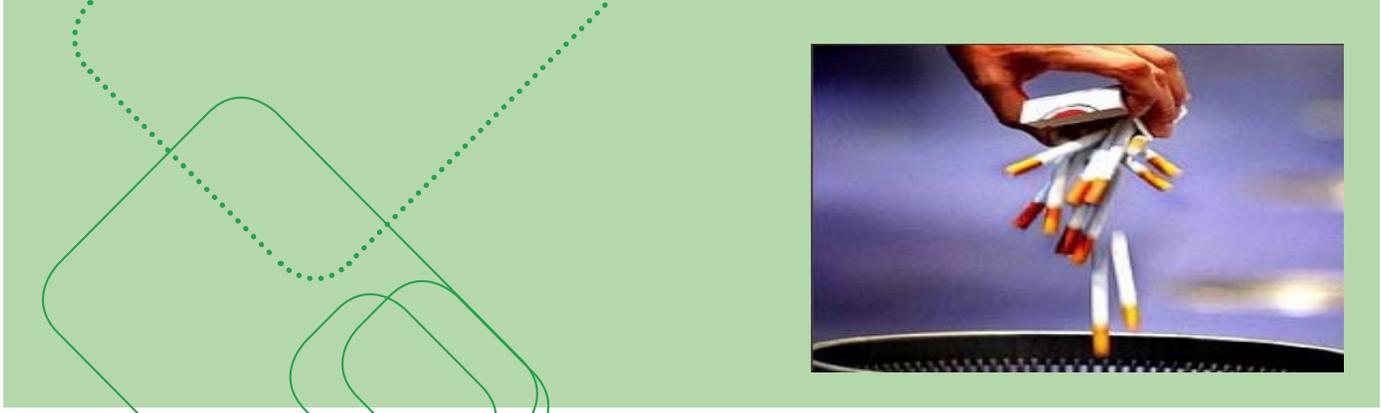
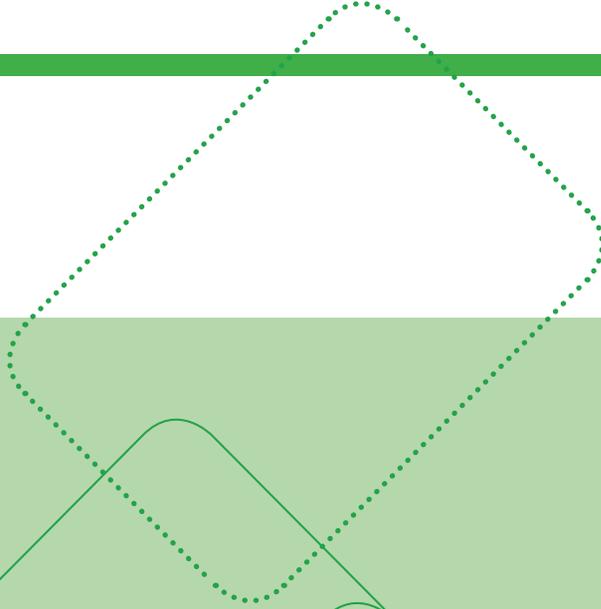
Something else to take into consideration is that giving lifestyle advice, supporting people in changing their behaviour and helping people to stop smoking is not necessarily something every physical therapist should be expected to do. The possibility of specialising in behaviour change and more preventive physical therapy is something that demands certain skills in physical therapy and as an individual physiotherapist.

Research has shown that exercise does have a role in stopping smoking, especially with specific risk groups, and that physical therapists have a part to play in this. As more medical specialists become aware of these developments, the use of exercise in therapies for stopping smoking will become more widespread and the development of cooperative health care between physical therapists and medical specialists will increase.

This report provides a greater insight into these issues. A continuous growth in knowledge about behavioural changes and the factors involved in stopping smoking will however increase physical therapists' knowledge bases and make it easier for them to help people who want to stop smoking.

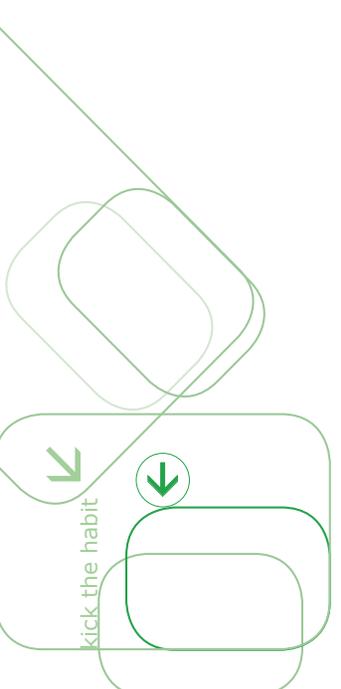
This report gives support to the creation of a guided exercise programme that best suits both the practice of physical therapy and physical therapy itself within a national context. The tools given in the appendix are examples which incorporate the most important points considered for inclusion in a guided exercise programme to support people stopping smoking. However changes or additions to these documents may well be made.





9.

Evaluation tools:  
how can I monitor progress?



## Evaluation tools: how can I monitor progress?

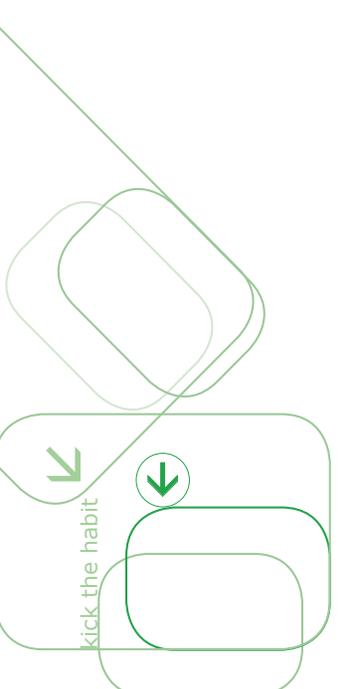
Not only is it important to know how a guided exercise programme can be tailored to meet the specific needs of individuals, but it is also important to evaluate to what extent the guided exercise programme results in people stopping smoking.

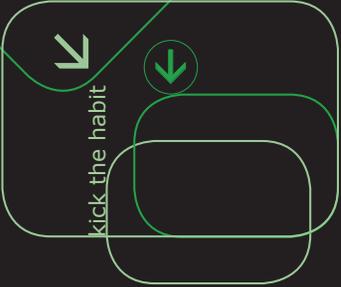
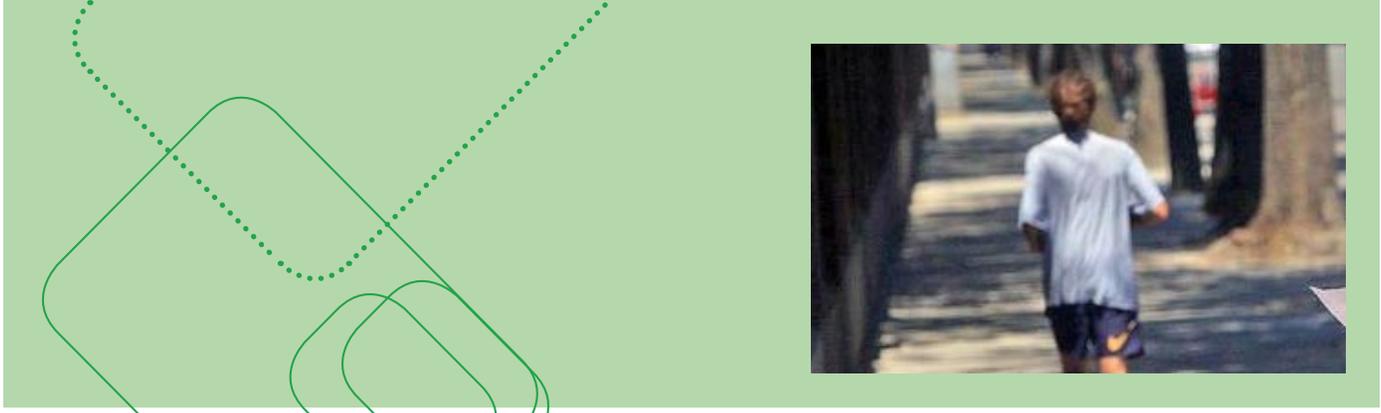
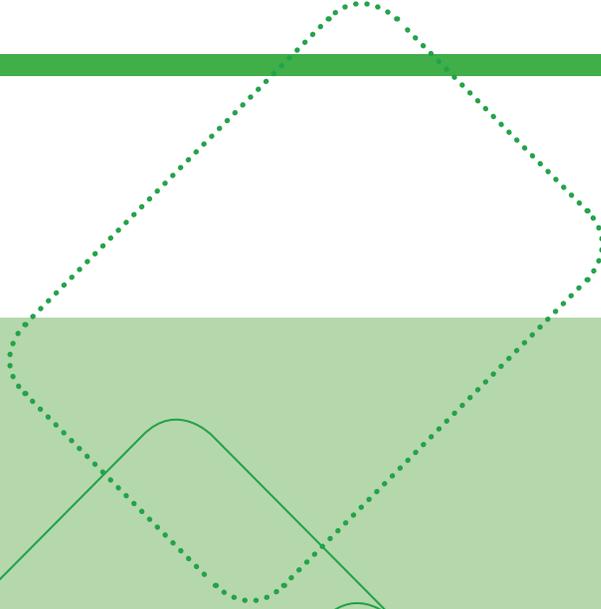
The following tools can therefore be used to record and verify the attempt to stop smoking:

- A self reporting / diary / questionnaire (a specific questionnaire can be found in the appendix)
- Monitoring by analysing people's breath using a breathing apparatus. This monitors the CO (carbon monoxide) concentration in a person's breath. CO concentration is a reliable indicator of whether a person has recently been smoking or not.

During the attempt to stop smoking a questionnaire can be used to determine the risk of a relapse (a specific questionnaire can be found in the appendix).

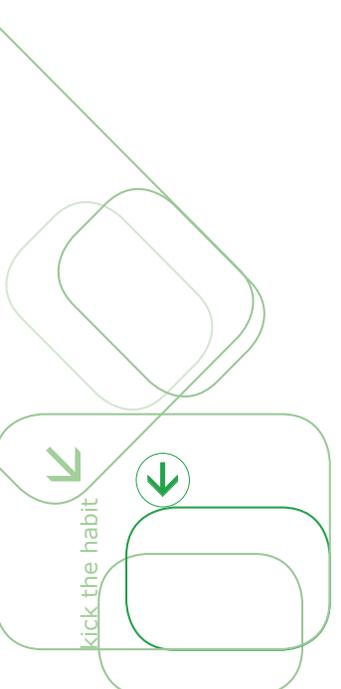
Because there are many questionnaires which try and summarise the issues relating to remaining a non-smoker and which also assess the possibilities of a relapse, only three examples of these are given in the appendix. Research shows that although some of the various different questionnaires may cover some additional issues, in general they can all be used for clinical purposes.





10.

Glossary



## Glossary

*Guided Exercise Programme: a programme comprised of exercises and physical activities to achieve a previously specified goal*

*Exercise: physical activity comprised of a specified series of actions, e.g. walking, cycling, rowing etc.*

*Physical activity can be: 1. exercises: supervised or unsupervised, 2. activities which are a part of everyday life, or an even broader definition is - 3. Activities which are performed at a physical level which demand exertion be made by the body.*

*Smoking cessation: all the methods by which a person stops smoking; this may be with or without some form of assistance.*

*VO2 max: maximum oxygen uptake during maximum activity by a person. It determines how much oxygen a person can use during maximum activity. The higher this figure, the greater the oxygen supply to the muscles. A higher oxygen supply to the muscles subsequently lower the energy consumption and let the individual exercise more efficiently.*

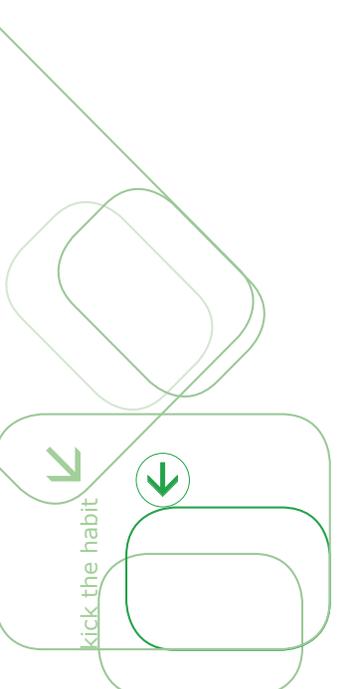
*Heart rate reserve (HRR): the difference between a person's maximum heart rate and the resting heart rate*

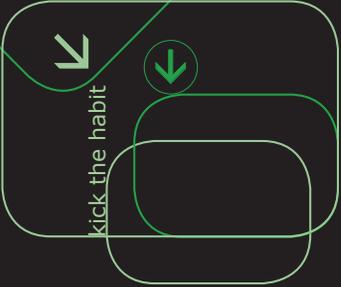
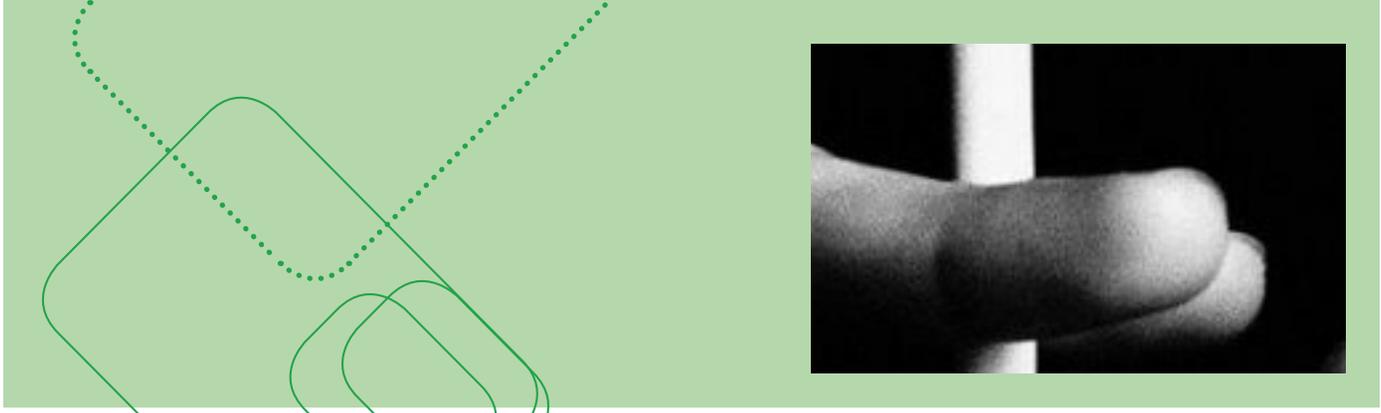
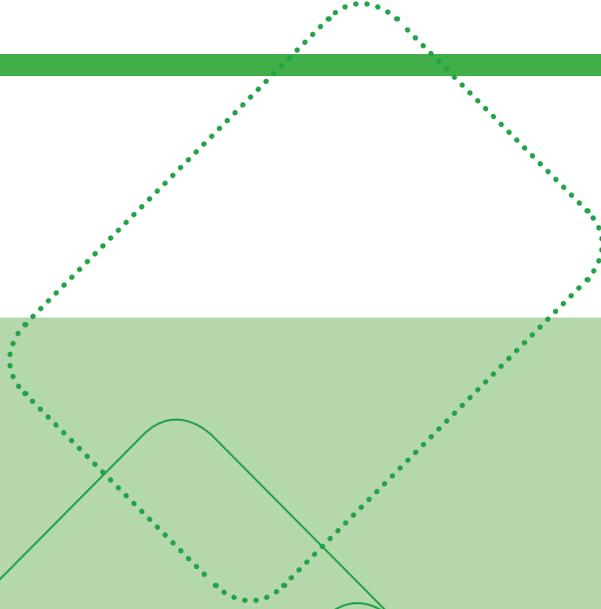
*Nicotine replacement therapy (NRT): the use of various methods of supplying nicotine and which is intended to replace the nicotine obtained from smoking or from other ways of using tobacco*

*Maximum heart rate: the maximum number of heart beats an individual makes in one minute*

*Negative effect: a negative emotion or subjectively experienced feeling e.g. anger or rage, disgust, distress or anguish, fear or terror, shame or humiliation.*

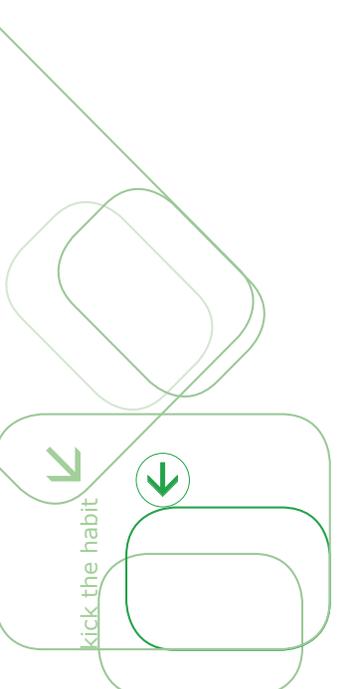
*Cognitive behaviour therapy (CBT): an umbrella term for psychotherapeutic systems dealing with cognition, interpretations, beliefs and responses with the aim of influencing behaviour.*





# 11.

Appendix



## Appendix

I International Physical Activity Questionnaire

II A general questionnaire on stopping smoking

III An example of self reporting on smoking cessation

IV Measuring the dependence on nicotine: the Fagerström test for nicotine dependence (FTND) de -

V Tobacco craving questionnaire (TCQ)

## I) International physical activity questionnaire

### SHORT SELF ADMINISTERED FORMAT COVERING THE PREVIOUS 7 DAYS

#### FOR USE WITH YOUNG AND MIDDLE-AGED ADULTS (15 to 69 years old)

The International Physical Activity Questionnaires (IPAQ) are a set of 4 questionnaires. There are long and short versions available for use by telephone or for self administration. The long version asks questions about five different areas of activity, while the short version asks questions about four more general topics. The purpose of the questionnaires is to provide common tools that can be used to obtain internationally comparable data on health-related physical activities.

#### The background to IPAQ

The development of an international measure of physical activity began in Geneva in 1998 and was followed by extensive testing of its reliability and validity in 12 different countries at 14 different sites during 2000. The final results suggested that the materials developed were suitable for use in many different settings and in many different languages, and that the material developed was suitable for prevalence studies based on national populations and which were concerned with the levels of participation in physical activities.

#### Using IPAQ

Use of the IPAQ tools for monitoring and research purposes is encouraged. It is recommended that no changes are made to the order, or to the wording of the questions as this will affect the psychometric properties of the tools.

#### Translation from English and cultural adaptation

Translation from English is supported to facilitate the worldwide use of IPAQ. Information on the availability of IPAQ in different languages can be obtained at [HYPERLINK "http://www.ipaq.ki.se/"](http://www.ipaq.ki.se/)www.ipaq.ki.se. If a new translation is undertaken it is highly recommen-

ded that the prescribed back translation methods available on the IPAQ website are used. If possible please consider making your translated version of IPAQ available to others by contributing it to the IPAQ website. Further details on translation and cultural adaptation can be downloaded from the website.

### **Further Developments of IPAQ**

International collaboration on IPAQ is ongoing and an International Physical Activity Prevalence Study is in progress. For further information see the IPAQ website.

### **More Information**

More detailed information on the IPAQ process and on the research methods used in the development of IPAQ tools is available at [HYPERLINK "http://www.ipaq.ki.se/"](http://www.ipaq.ki.se/)www.ipaq.ki.se and Booth M.L., 'Assessment of Physical Activity: An International Perspective', *Research Quarterly for Exercise and Sport*, 71 (2), 2000, pp. 114 to 120. Other scientific publications and presentations on the use of IPAQ are summarised on the website.

# INTERNATIONAL PHYSICAL ACTIVITY QUESTIONNAIRE

We are interested in finding out what kinds of physical activities people do as part of their everyday lives. The questions will ask you about the time you spent being physically active during the **last 7 days**. Please answer each question even if you do not consider yourself to be an active person. Please think about the activities you do at work, as part of your work in the house and garden, to get from place to place, and in your spare time for recreation, exercise or sport.

Think about all the vigorous activities that you did during the **last 7 days**. **Vigorous** physical activities refer to activities that require hard physical effort and make you breathe much heavily than normal. Consider only those physical activities that you carried out for at least 10 minutes at a time.

1. During the **last 7 days** on how many days did you do vigorous physical activities like heavy lifting, digging, aerobics, or rapid cycling?

\_\_\_\_\_ **days per week**

No vigorous physical activities

**Go to question 3**

2. How much time did you typically spend doing **vigorous** physical activities on one of those days?

\_\_\_\_\_ **hours per day**

\_\_\_\_\_ **minutes per day**

Don't know / Not sure

Think about all the **moderate** activities that you carried out during the **last 7 days**. **Moderate** activities refer to activities that take a moderate amount of physical effort and make you breathe slightly more heavily than normal. Consider only those physical activities that you did for at least 10 minutes at a time.

3. During the **last 7 days**, on how many days did you do **moderate** physical activities like carrying light loads, cycling at a steady pace, or playing doubles tennis? Do not include walking.

\_\_\_\_\_ **days per week**

No moderate physical activities

**Go to question 5**

4. How much time did you typically spend doing **moderate** physical activities on one of those days?

\_\_\_\_\_ **hours per day**

\_\_\_\_\_ **minutes per day**

Don't know / Not sure

Think about the time you spent walking during the **last 7 days**. This includes walking at work and at home, walking to get from place to place, and any other walking that you might do solely for recreation, sport, exercise, or leisure.

5. During the **last 7 days**, on how many days did you **walk** for at least 10 minutes at a time?

\_\_\_\_\_ **days per week**

No walking

**Go to question 7**

6. How much time did you usually spend **walking** on one of those days?

\_\_\_\_\_ **hours per day**

\_\_\_\_\_ **minutes per day**

Don't know / Not sure

The last question is about the time you spent **sitting** on weekdays during the **last 7 days**. Include time spent at work, at home, while doing coursework and during your leisure time. This may include time spent sitting at a desk, visiting friends, reading, or sitting or lying down to watch television.

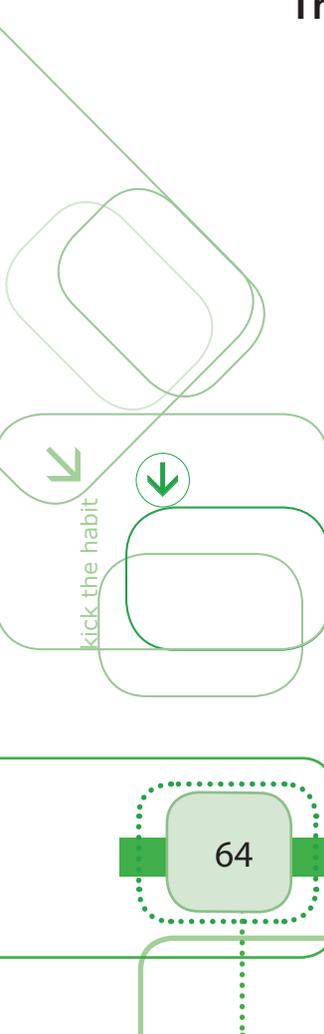
7. During the **last 7 days**, how much time did you spend **sitting** on a **week-day**?

\_\_\_\_\_ **hours per day**

\_\_\_\_\_ **minutes per day**

Don't know / Not sure

**This is the end of the questionnaire, thank you for taking part.**



## II) A general questionnaire on stopping smoking

Name	
Address	
Date of birth	
Age	
Gender	
Weight	
BMI	
Education	
Job	
Marital status	
Profession	
Disease	
Stage of disease	
Daily physical activity (questionnaire)	
Smoking	
Smoking rate	
Previous attempts to stop smoking	
Willingness to participate	
Own thoughts on disease and on stopping smoking	
Knowledge of effects of stopping smoking	
Smokers in your immediate environment	
Social support	

### III) An example of self reporting on smoking cessation

(from: Youth Risk Behavior Surveillance, United States, 1999)

During the past 30 days, on how many days did you smoke cigarettes?

1. 0 days
2. 1 or 2 days
3. 3 to 5 days
4. 6 to 9 days
5. 10 to 19 days
6. 20 to 29 days
7. Every day

On the days that you have smoked during the past 30 days, how many cigarettes did you smoke per day?

1. I did not smoke any cigarettes during the past month
2. 1 cigarette per day
3. 2 to 5 cigarettes per day
4. 6 to 10 cigarettes per day
5. 11 to 20 cigarettes per day
6. more than 20 cigarettes per day

Have you tried to stop smoking cigarettes?

1. Yes
2. No

## IV) Measuring the dependence on nicotine: the Fagerström test for nicotine dependence (FTND)

The Fagerström test assesses the intensity of an individual's dependence on nicotine. The higher the score the more attention needs to be paid to the side effects of stopping smoking (higher risk of relapsing). It is used when patients are admitted.

### Fagerström Test for Nicotine Dependence

Name: \_\_\_\_\_ Date: \_\_\_\_\_

#### 1. How soon after you wake up do you have your first cigarette?

- A. Within 5 minutes (3)
- B. 6 to 30 minutes (2)
- C. 31 to 60 minutes (1)
- D. After 60 minutes (0)

#### 2. Do you find it difficult to refrain from smoking in places where it is forbidden e.g. in church, the library, and the cinema, etc?

- A. Yes (1)
- B. No (0)

#### 3. Which cigarette would you hate most to give up?

- A. The first one in the morning (1)
- B. All the others (0)

**4. How many cigarettes per day do you smoke?**

- A. 10 or less (0)
- B. 11 to 20 (1)
- C. 21 to 30 (2)
- D. 31 or more (3)

**5. Do you smoke more frequently during the first few hours after waking than during the rest of the day?**

- A. Yes (1)
- B. No (0)

**6. Do you smoke even if you are so ill that you are in bed for most of the day?**

- A. Yes (1)
- B. No (0)

Calculating the total number of points from all the questions determines whether a patient is dependent on nicotine.

Scoring:

7 to 10 points = highly dependent; 4 to 6 points = moderately dependent; less than 4 points = less dependent.

Higher scores indicate that withdrawal symptoms from quitting tobacco are more likely and are likely to be stronger

68

kick the habit

## V) The Minnesota Withdrawal Scale - Revised (MNWS-R)

In order to monitor cravings for tobacco and other side effects during the attempt to stop smoking, the Minnesota Withdrawal Scale - Revised (MNWS-R) can be used.

The higher the score, the more attention needs to be paid to the side effects of stopping smoking.

### Behaviour Rating Scale

#### Self Reporting

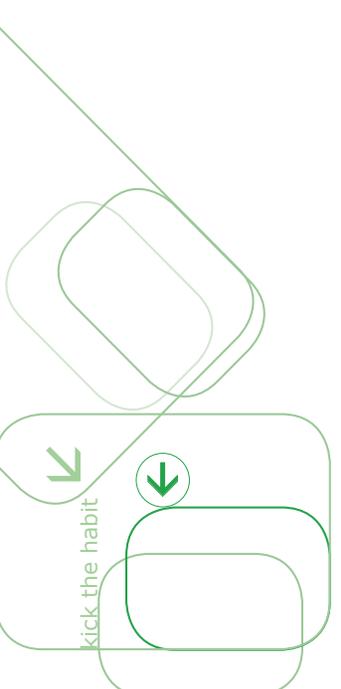
Please assess yourself for the period covering the last \_\_\_\_\_

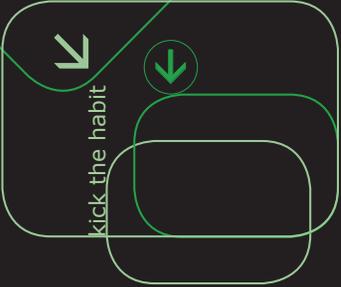
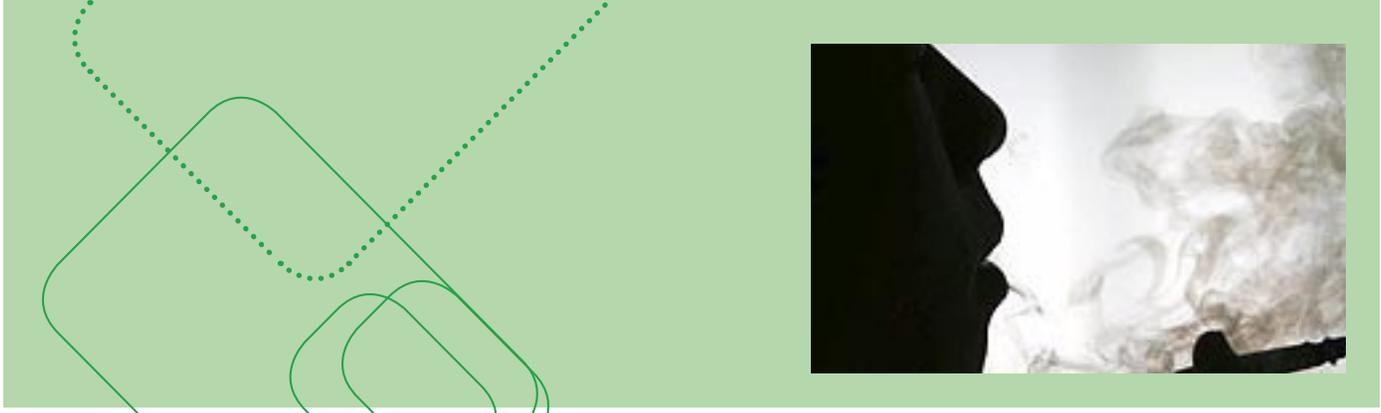
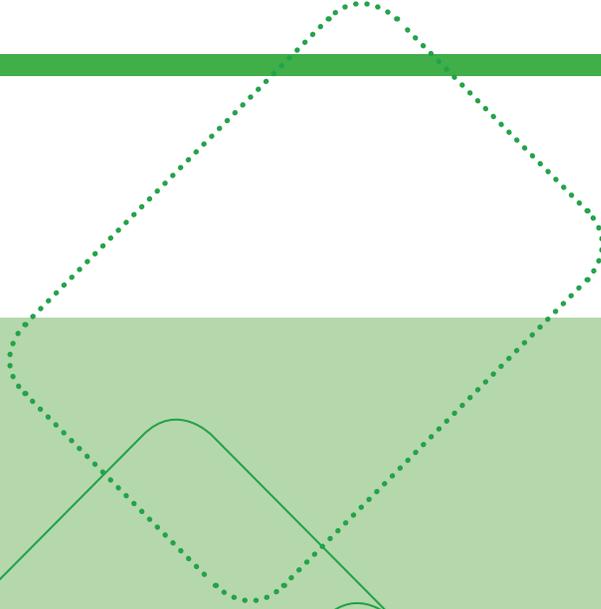
0 = none, 1 = slight, 2 = mild, 3 = moderate, 4 = severe

- |  |           |
|--|-----------|
| 1. Angry, irritable, frustrated              | 0 1 2 3 4 |
| 2. Anxious, nervous                          | 0 1 2 3 4 |
| 3. Depressed mood, sad                       | 0 1 2 3 4 |
| 4. Desire or craving to smoke                | 0 1 2 3 4 |
| 5. Difficulty concentrating                  | 0 1 2 3 4 |
| 6. Increased appetite, hungry, weight gain   | 0 1 2 3 4 |
| 7. Insomnia, sleep problems, waking at night | 0 1 2 3 4 |
| 8. Restless                                  | 0 1 2 3 4 |
| 9. Impatient                                 | 0 1 2 3 4 |

Heart rate \_\_\_\_\_ bpm

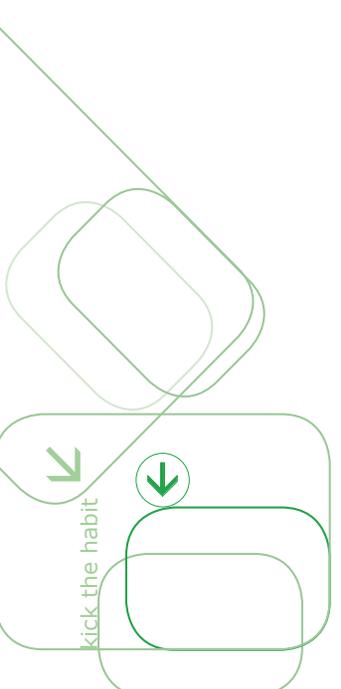
Weight \_\_\_\_\_ kg





12.

Partners



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