

# Five-day plan for smoking cessation using group behaviour therapy

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## Summary

The “Five-Day Plan to Stop Smoking” (FDP) is an educational group technique for smoking cessation. We studied a cohort of 123 smokers (55 men, 68 women, mean age 42 years) who participated in 11 successive FDP sessions held in Switzerland between 1995 and 1998 and who were followed up for at least 12 months by telephone or direct interview. Overall, 102 of the 123 subjects (83%) had stopped smoking by the end of the FDP, and self-declared smoking cessation rate was 25% after one year. The following factors potentially associated with outcome were studied: age, sex, smoking habit duration, cigarettes per day, Fager-

ström Test for Nicotine Dependence (FTND), group size, and medical presence among the group leaders. Smoking habit duration was the only variable which showed a statistically significant association with success: the rate of smoking cessation was higher among patients who had smoked for less than 20 years (34.7% vs. 18.9%,  $p = 0.049$ ). Stress was the most common cause of relapse. The FDP appears to be an effective smoking cessation therapy. Propositions are made in order to improve the success rate of future sessions.

*Key words: smoking cessation; behaviour therapy; five-day plan*

## Introduction

The efficacy of the five-day plan to stop smoking (FDP) has seldom been assessed in a country such as Switzerland, whose level of tobacco control is still insufficient [1]. Furthermore, the previous studies were performed before pharmacotherapy for smoking cessation, such as Nicotine Replacement Therapy (NRT), was either available or widely used [2–4].

For many years, Switzerland occupied the sixth position in the world classification of cigarette consumption: 35% of the population are smokers. The highest proportion of smokers is found among young adults aged 20 to 24, with 46% of men and 36% of women being smokers [5].

Furthermore, smoking also extends to younger age groups: among 15-year-old schoolchildren, smoking increased from 15% in 1986 to 25% in 1998 [6]. Smoking is also on the increase in the female population [7, 8; press release]. Despite evidence of morbidity during pregnancy, the proportion of smokers among pregnant women increased from 15% in 1981 to 25% in 1995 [9, 10].

In Switzerland, 600,000 smokers try to give up the habit every year but only 100,000 succeed [11]. The spontaneous success rate is 4% [12].

The aim of this study was to evaluate the long term efficacy of the FDP in a Swiss population.

## Patients and methods

### FDP

The FDP is a group method for smoking cessation developed in the United States in the late fifties. The program is led by a physician and a psychologist trained to treat both the physiological and the psychological aspects of smoking cessation. Their knowledge is updated annually by following the courses specific to the FDP.

Participants are volunteers who respond to an announcement in the local media. Information flyers are also sent to former participants and to family doctors in the area. No exclusion criteria are applied. The registration fee is 100 Euros. Some health insurance companies participate, but this is not systematic. A FDP session takes place over 5 consecutive evenings, preceded by a prepara-

tory meeting the week before. Each meeting lasts about 90 minutes. Two further meetings are organized in order to reinforce motivation, one after 2 weeks and the other after 1 month. Further meetings are planned according to the group's wishes.

The first moderator, generally a doctor, provides information on public health, the neuro-endocrine effects of nicotine on the brain, and the physiopathological effects of smoke on the cardiovascular and pulmonary systems. He / she also gives dietary advice in order to limit weight gain. Emphasis is placed on the physiopathological aspects of withdrawal symptoms and their reversibility.

Complete abstinence is proposed from the first meeting onward and no nicotine substitution is proposed. Subjects are referred to their family doctor for any medical prescription.

On the psychological level, the FDP methodology is based on educational, cognitive and behavioural work in order to develop a non-smoker psychological approach. The moderator reinforces motivation by suggesting exploration of possible conscious and unconscious influences [13]. Long-term cessation is obtained by stress management (i.e. physical exercise, relaxation, rest), avoidance of high-risk situations and emphasis of the possible benefits. Daily success rates of the group are shown to encourage each participant. Solidarity is reinforced by the exchange of phone numbers ("buddy system" of mutual reinforcement).

A diet is proposed for each day to facilitate withdrawal, to correct possible dietary imbalance associated with smoking and smoking cessation, and to increase awareness of the risk of weight gain. For the first 24 hours intake is restricted to water and fruits. During the week, vegetables, cereals and dairy products are introduced successively. This diet is adapted to specific cases such as diabetic patients or manual workers. Participants are advised against alcohol and coffee consumption to avoid positive reinforcement. Each meeting is followed by a snack based

on the dietary items to be added to the next day's diet, and personal contact between participants is possible at this time.

## Study

This study analysed 11 consecutive FDP sessions held in Switzerland (Vaud canton, a French speaking part of the country) between May 1995 and February 1998. Each participant filled out a questionnaire to collect data on age, sex, smoking habit duration, cigarettes per day, and Fagerström Test for Nicotine Dependence (FTND) [14].

All participants were contacted by phone by one of the moderators after 3, 6, 12 and 24 months. After 7 unsuccessful attempts to make phone contact, the participant was judged to be lost to follow-up and considered a failure. When the participant was absent only the partner was considered to be a reliable source of information.

The smoking of even 1 cigarette was considered as a relapse.

Likelihood of cessation was analysed according to age ( $\leq 40$  years vs.  $>40$  yr), sex, smoking habit duration ( $<20$  yr vs.  $\geq 20$  yr), cigarettes per day ( $\leq 20$  cig/day vs.  $>20$ ) and FTND ( $\leq 4$  vs.  $>4$ ). Cutoff points were arbitrarily determined for dichotomization of these variables. The chosen value for FTND is consistent with previous reports [15].

We used the Chi-square or Fisher's Exact tests for the comparison of categorical data, and T-test or Wilcoxon-rank sum test for comparison of continuous data. A p-value  $< .05$  was considered as significant. We used logistic regression analysis to adjust for potential confounders when assessing the association between smoking abstinence and the covariates mentioned above. Results are presented as odds-ratio (OR) with their 95% confidence intervals (95% CI). Statistical analyses were performed with Stata (Stata Corporation – College Station, Tx) software. For smoking abstinence we performed an intention-to-treat analysis and considered smokers lost to follow-up as continuing smokers.

## Results

The total number of participants studied was 123. Their baseline characteristics are shown in table 1.

No patient received additional NRT during FDP.

Five patients attended two FDP sessions. We consider only the first one for the current analysis. Seven participants dropped out before the fifth meeting, representing 7 relapses. Six participants were lost to follow-up. Even though four of these did not resume smoking after the FDP sessions they were considered as relapses after one month.

The smoking abstinence rates were the following: at the end of the session, 102 of the 123

participants (82.9%) had stopped smoking. Success rates were 66.7% at 1 month, 48.8% at 3 months, 30.9% at 6 months and 25.2% after 1 year.

Likelihood of cessation according to age, sex, smoking habit duration, cigarettes per day, FTND, number of participants and medical presence are reported in table 2.

Smoking habit duration was found to be the only statistically significant prognostic factor.

Rate of smoking cessation was higher among patients who had smoked for less than 20 years (34.7% vs. 18.9%,  $p = 0.049$ ), and this association was confirmed by multivariate analysis (OR 1.35 [1.11–2.27]).

Figure 1 shows the evolution of the cohort according to smoking duration.

We did not find any relationship between the increasing expertise of the moderators and success rates (data not shown).

The main reason given for relapse was stress for 44 participants (47.8%), lack of motivation for 17 (18.5%), social pressure for 15 (16.3%), depression for 7 (7.6%), and weight gain for 3 (3.3%).

**Table 1**  
Baseline patients characteristics  
(n = 123).

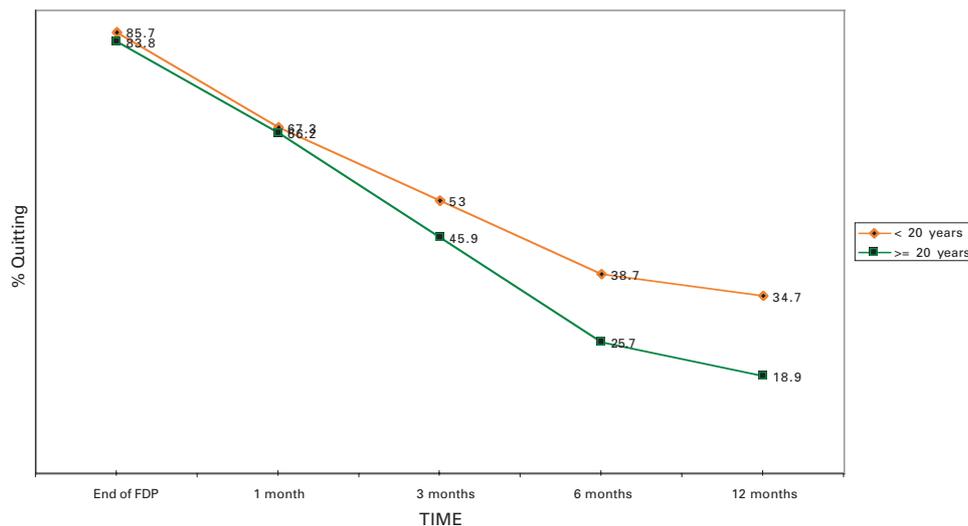
Mean age, years (range)	42	(18–71)
Male, %	44.7	
Mean cigarette consumption / day (range)	25	(5–70)
Mean duration of smoking, years (range)	21.5	(1–53)
Mean Fagerström score (range)	6	(1–10)
Mean participants / session (range)	16	(4–27)

**Table 2**  
Prognostic factors.

		n	Success rate after 12 months		n	Success rate after 12 months	p-value
age	≤40 years	59	23.70%	>40 years	64	26.60%	0.718
sex	women	68	25.00%	men	55	25.50%	0.954
smoking habit duration	<20 years	49	34.70%	≥20 years	74	18.90%	0.049
cigarettes per day	≤20 cig/day	63	25.40%	>20 cig/day	60	25.00%	0.96
6-item Fagerström score	≤4	32	18.80%	>4	91	27.50%	0.328
number of participants	≤5 / session	8	25.00%	>5 / session	115	25.20%	0.989
medical presence	yes	100	26.00%	no	23	21.70%	0.671

**Figure 1**

Evolution according to smoking habit duration.



## Discussion

Our study shows that 25% of smokers attending FDP are abstinent at 1 year. During the first 3 months the proportion of relapses was high (56%) but diminished after that. This observation is comparable with that already reported in the literature [16, 17]. The success rate with FDP at one year in our study population was comparable with that obtained by techniques of smoking cessation using nicotine substitution [18]. These results could be improved by combined treatments [19].

The only variable which had a statistically significant impact on long-term outcome was the smoking habit duration: the long-term success rate was greater in subjects who had smoked for less than 20 years. Several hypothesis may be evoked to explain this: a longer period of exposure to reinforcement mechanisms may render smoking cessation more difficult; gestural habits may become even more ingrained after a consumption of 20 years' duration; lastly, there is the possibility that a progressive change may occur in the functions of nicotine-dependent receptors.

The other prognostic factors considered (age, sex, cigarette consumption, FTND, number of participants in sessions and medical presence) were not found to be associated with long-term success, and their predictive value is in fact contested in the literature [2, 20, 21].

The participants attributed the majority of relapses to a state of stress, as described by the participants. Irritability, agitation, difficulty in concentrating, frustration and nervous tension were found to be the main outward manifestations of this stress. These symptoms of nicotine withdrawal on the central nervous system could have been attenuated by giving a controlled amount of nicotine. This approach could also be useful in limiting relapse due to the development of depression. Unfortunately, the framework of the FDP does not permit the individual detection of depressive tendencies or latent anxiety as envisaged by the consensus conference on smoking cessation in 1998 [6]. However, the doctor moderating the FDP sessions emphasises the anti-depressive effect of nicotine and the risk of depression during cessation in at-risk subjects [22, 23]. In case of doubt the participant is encouraged to consult his family doctor at an early stage.

In the majority of studies fear of weight gain is considered to be an obstacle to smoking cessation [9]. In our experience this obstacle was the cause of only a small proportion of relapses. This encouraging result was certainly due to the dietary advice given and to the special diet proposed, which constitute one of the major advantages of the FDP.

There have been relatively few studies on the results of the FDP in Europe and the USA. To our knowledge no such study has been carried out in Switzerland.

Success rates at one year as reported in the literature vary between 16% and 66% [2–4, 20, 24–30]. Patient selection methods, definition of success and the statistical analysis methods used by the different authors may explain these disparities. The median success rate of all the studies was 28.15%, which corresponds to our results. A meta-analysis has been carried out on the evaluation of group behavioural methods [31]. Ten studies compared a group programme and an individual programme using the same information. They clearly demonstrated the superiority of the group methods (OR 2.10 (95% CI 1.64–2.70)). In contrast, when compared to medical or nurse counselling, the group therapy methods did not influence the chances of success. However, it should be noted that there was a high degree of heterogeneity in the methodology and in the results.

Participation in FDP sessions implies a voluntary act by the smoker. Because the study population was recruited via the FDP, participants may be considered as being in the “preparation” phase according to the classification method described by Prochaska [32]. Therefore, our study population cannot be considered to be representative of smokers as a whole: in an unselected Swiss study population, 73% of smokers were found to be in the “precontemplation” phase when using the same classification method [33]. On the other hand, in view of the voluntary act described earlier, the FDP population can be compared to subjects who seek out the other therapeutic aids to smoking cessation which are available to smokers.

An objective check of abstinence is one of the problems inherent in the validation of a smoking cessation method. The voluntary decision to participate in the FDP and the psychological approach of this method help to make the smoker feel responsible for his/her smoking cessation, and we thus decided not to confirm the smoking cessation by measurement of CO or urinary cotinine levels. We consider that the “confidence relationship” built up between the session leaders and each participant in the course of the five evening sessions is such as to guarantee the veracity of the answers to questioning during follow-up. Indeed, the literature confirms the value of the replies given by participants in a smoking cessation therapy

method concerning their tobacco consumption [34]. Nevertheless, the lack of an objective measure to verify the self-declared smoking status is a clear limitation of this study.

Replication of the method was another problem met with in the evaluation of FDP, even though it is considered to be the best codified behavioural therapy [35]. Many and diverse parameters may influence the outcome of a session: the session leaders, whose personality and experience may condition the relationship which is established with each participant; the size and composition of the groups; the socio-cultural context; and the local mentality may all play such a role. In this study no attempt was made to compare one session with another. The heterogeneous nature of our study population permits a comparison of our results with other studies published concerning the FDP, as these also concern widely varying study populations.

### Conclusion

The success rate after one year was 25%. The FDP offers global physiological and psychological support, without medication or other treatments.

This result is in concordance with other published results using this method. Comparison with other recognized methods (nicotine substitution, anti-depressants, behavioural therapies) showed similar efficacy.

Smoking habit duration of less than 20 years was the only statistically significant positive prognostic factor.

Relapse occurred early and about half of all the smokers mentioned stress as the relapse factor. On the other hand, weight gain was seldom mentioned as a factor of relapse.

In order to improve the results, individual medical support on an out-patient basis should be provided after treatment.

Further studies are needed to evaluate the benefit of combining the FDP either with nicotine substitution for patients with marked withdrawal symptoms, or with anti-depressant treatment for at-risk patients.

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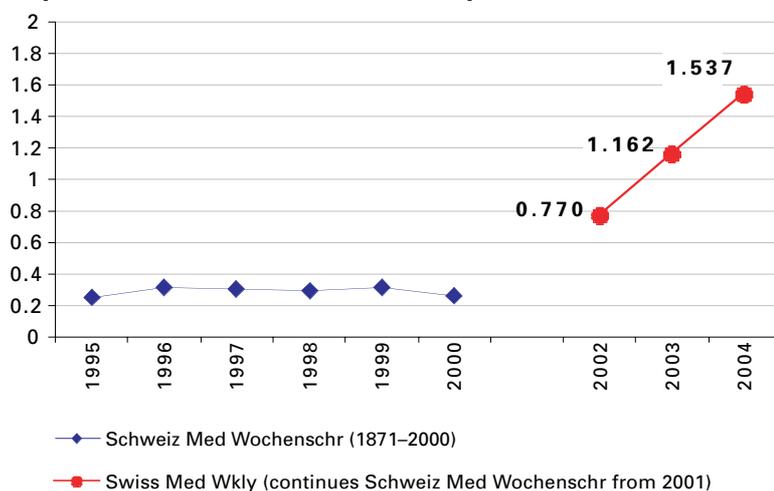
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