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ORIGINAL ARTICLE

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Smoking cessation at the workplace: 1 year success of short seminars

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Abstract *Objectives*: In search of less time-consuming methods of smoking cessation Allen Carr' seminars performed at workplaces in Austria were evaluated. *Methods*: Of all the 357 smokers attending a seminar in summer 2002, 308 (86%), consented to participate in a repeated health survey, including the SF-36 questionnaire. After 3 months 268 (87%) gave computer-aided telephone interviews and 223 (72%) after 1 year. Analysis by logistic regression was done separately for males and females. *Results*: The 1-year quit rate was 40% (worst case assumption) to 55% (best estimate). In 96% of quitters an intensive counseling for 6 h without pharmaceutical aid thereafter was sufficient to maintain abstinence for 12 months. A long smoking history or many earlier unsuccessful attempts to quit did not predict failure. The risk of relapse was found higher in young men with a high number of pack-years and in women with good physical fitness but high Fagerstroem score and financial reasons for the intention to quit smoking. While an average weight gain of 3 kg in males was not associated with failure to quit smoking, we found the highest weight gain (4 kg) in females in the group abstinent at 3 months but smoking again at 12 months. In all participants subjective life quality scored by SF-36 improved. In quitters perception of general health improved more. *Conclusions*: Group counseling at the workplace was found to be an efficient method of smoking cessation, capable of increasing subjective life quality and health and to smooth the way to smoke-free enterprises.

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Introduction

Workplaces can offer services with proven effectiveness to individual smokers seeking to stop smoking [7, 12]. Group therapies have been found to be more successful than self-help, and other less intensive interventions [6, 13]. Even cessation rates in the general population increase significantly with smoke-free workplaces [2, 5].

After a long struggle on the part of the Austrian Council on Smoking and Health [1], supported by the Austrian Medical Chamber and important members of labour unions, the Ministry of Economy and Labour finally improved the protection of non-smokers by amending the Workers Protection Law in December 2001. Lack of compliance in a survey in 2002 was attributed to lack of smoking rooms and lack of support for smokers willing to quit, however, a number of enterprises were found supporting courses for smokers [8], most of them using the services of a company working with a method called Easyway by Allen Carr [3]. Because these seminars offered in many countries have not been evaluated before, we decided to analyse the 1-year success rate of all courses performed by this method in Austrian enterprises during a 4 month period (17 seminars lasting 6 h each). The aim was complete abstinence (not reduction of smoking) after the seminar.

Methods

Intervention

The method applied assumes that many smokers motivated to quit are still caught in a vicious circle driven by fear (to stay addicted, to get sick, etc.) and every time they think of quitting they associate the craving and the fear of losing something they are used

to. Partly subconscious fear in turn seems to trigger the wish to light a cigarette. The trainer therefore attempts in his structured talk and open group discussion to disrupt this vicious circle by making the smoker realize why he smokes, taking away his fear that he cannot cope with stress, etc., without smoking and giving him the feeling that he is not losing out on something without a cigarette, but to gain freedom, self-confidence, health, well-being, etc. At the end of this coaching all participants extinguish their last cigarette in a ritual. The four trainers conducting the seminars were ex-smokers who had been trained to give the same motivational support in all enterprises.

Participants

All 357 subjects that attended Allen Carr' seminars performed in Austrian enterprises during the time period June to September 2002 were asked to participate in the study. Overall 308 (86%) gave written consent. From 49 participants that did not answer the initial questionnaire 31 could be contacted by telephone approximately 18 months after the seminar. These non-responding subjects did not differ from responders with respect to age (median 39 years in non-responders vs. 40 years in responders), gender (80 males vs. 77%) or education (94 vs. 93% at least vocational/secondary school).

Three months and 12 months after the smoking cessation seminars standardized, computer aided telephone interviews were conducted. At the first interview 268 (87%) of the participants could be contacted, at the 12 months interview, this number was 223 (72%). Subjects that could not be reached after numerous attempts (85 participants) did not differ in most demographic characteristics from those that were interviewed: median age 39 versus 40 years, 74 versus 79% males, 91versus 93% with at least vocational/secondary school education. The only characteristic that showed a difference was living with a partner: only 73% of those without interview as compared to 83% in interviewed participants reported living with a partner.

Instruments

The initial self-administered questionnaire consisted of smoking history and smoking habits including the Fagerstroem Dependence Scale inquired in the first part [4], history of chronic diseases, respiratory health within the last 3 months, the Short Form SF-36 Health Survey inquired in the second part [10], and in the third part demographic criteria including smoking of parents and partner were investigated and additionally body weight of the participant.

The interview after 3 and 12 months was structured equally and consisted of two parts: the first one consisted of questions about smoking status, difficulties in remaining abstinent, other smoking cessation measures after the seminar, and in those that were again smoking possible reasons for failure to remain abstinent; the second part was the same as the second part of the initial questionnaire.

Statistical methods

Univariate statistical comparisons of groups (responders vs non-responders, or abstinent vs again smoking participants and those with unknown smoking status) were done by non-parametric statistical methods (Kruskal–Wallis or Mann–Whitney tests) for quantitative variables and by Chi-square tests for qualitative data. No correction for multiple testing was done, however, for post hoc comparison of groups, appropriate control of alpha error was applied. Comparisons over time points within groups were done by Friedman tests or sign tests (for three or two time points, respectively).

Multivariate analysis of 1-year quit rate was done by logistic regression, with three blocks of data, each of which was tested by the stepwise conditional method with the criterion of inclusion set to a P value of 0.1 and the exclusion criterion set to 0.2. These analyses were done separately for males and females because exploratory analyses indicated substantial differences between sexes in possibly relevant predictors of smoking cessation. The first block of data consisted of age, marital status, education, initial body mass index, and weight gain after 3 months. The second block contained duration of smoking, age at starting to smoke regularly, average number of cigarettes per day, pack-years, Fagerstroem score, smoking of parents, reasons for the intention to quit smoking, number of earlier attempts to quit smoking, type of smoker (peak, level, mixed type), and the third block contained eight sub-scores of the SF-36 Health Survey and the initial respiratory health status. Relative risk of smoking again after 1 year was computed as the exponential function of the estimated logistic regression parameter. In addition 90% confidence intervals for relative risk estimates were computed.

Results

The demographic characteristics of participants are shown in Table 1. Median age was 40 years (quartile range 33–46 years), 238 (77%) were males. The majority of participants (193, 63%) had finished vocational school. Except for 61 participants (20%) all reported living with a partner.

Overall, the 1-year quit rate was 40%. Assuming among participants with unknown smoking status, the same proportion of abstinent subjects as in those that were successfully contacted, the quit rate would amount to 55%. In subjects that participated in the cessation seminar but did not consent to take part in the study (overall 49, 31 of which could be contacted

Table 1 Demographic characteristics of participants answering the initial questionnaire ($N = 308$) stratified according to information on smoking status available 12 months after smoking cessation counseling

Gender	Abstinent	Smoking	Unknown	Total	*P*-value
Total	122 (40%)	101 (33%)	85 (28%)	308	0.697
Male	95 (40%)	80 (34%)	63 (26%)	238	
Female	27 (39%)	21 (30%)	22 (31%)	70	
Marital status					
With partner	107 (44%)	77 (31%)	61 (25%)	245	0.019
Without	15 (25%)	23 (38%)	23 (38%)	61	
Partner					
Smoker	45 (37%)	40 (33%)	36 (30%)	121	0.330
Ex-smoker	21 (49%)	12 (28%)	10 (23%)	43	
Non-smoker	38 (51%)	21 (28%)	15 (20%)	74	
Parents					
Smokers	85 (44%)	76 (39%)	32 (17%)	193	0.528
Non-smokers	35 (51%)	22 (32%)	12 (17%)	69	
Education					
Compulsory school	8 (42%)	7 (37%)	4 (21%)	19	0.859
Vocational school	91 (47%)	69 (36%)	33 (17%)	193	
Upper secondary school	17 (45%)	14 (37%)	7 (18%)	38	
University	6 (40%)	8 (53%)	1 (7%)	15	
Age					
Md [Q1–Q3]	41 [35–48]	38 [32–45]	39 [32–45]	40 [33–46]	0.017

P-values from the comparison of participants abstinent, smoking or with unknown status at that time with respect to these characteristics by Chi-square or Kruskal–Wallis tests

by telephone 18 months after the seminar) the 1-year quit rate was 48%.

Concerning the statistical differences in demographic characteristics between those abstinent 12 months after the smoking cessation program, those again smoking, and those with unknown smoking status only age and marital status reached significance. Abstinent participants were 2–3 years older and more frequently with a partner (88%) as compared to smokers (77%) and those with unknown smoking status (73%).

Smoking-related parameters are summarized in Table 2. There was no statistically significant difference in these characteristics between those who quit smoking and were still abstinent after 12 months and those who were again smoking or with unknown smoking status at this time. A tendency, however, for a longer history of smoking but lower Fagerstroem score was found in abstinent participants. The majority (70%) reported earlier attempts to quit smoking. No difference was found in the quit rate depending on these earlier attempts.

Initially as well as 3 and 12 months after the smoking cessation program participants answered the SF-36 health questionnaire. None of the sub-scales obtained initially showed a significant difference between those that quit smoking, as compared to those that were again smoking after 12 months or those with unknown smoking status. Data obtained 3 months after the seminar, however, revealed a significant improvement in both groups, which either persisted or further improved until the second interview after 12 months (Fig. 1). Improvement was significantly ($P = 0.02$) better in abstinent participants for self-reported status of general health than in those again smoking. In other sub-scales the overall increase after the seminar was not significantly different between the two groups, but nonsmokers at 3 months had higher values in five of eight sub-scales and after 12 months those that were still non-smoking had significantly higher values in all but one sub-scale (Fig. 1).

Three of the initially reported reasons to quit smoking differentiated between participants that quit smoking and those that smoked again after 12 months or with unknown smoking status: financial reasons were associated with a lower quit rate, those specifying consideration for non-smokers as a reason to stop smoking were found less frequently while other reasons were stated more frequently among those with unknown smoking status after 12 months (Table 3).

Male as well as female participants that were abstinent 12 months after the smoking cessation program showed a significant weight gain (Table 4). In males also the group that was again smoking after 12 months showed a significant weight increase at 3 months. In Table 5 it is shown that this is due to the subgroup that was abstinent at 3 months. The most pronounced weight gain (with an average of 4 kg) was observed in the subgroup of women that were abstinent after 3 months but again smoking after 12 months.

Multivariate logistic regression revealed a small number of variables that may be predictive of the 1-year quit rate. In males higher age and lower number of pack-years were predictive of effective smoking cessation. Weight gain was hypothesized to be predictive of failure of smoking cessation, but it turned out that the opposite applies. This, however, is only an indication of the reversal of cause and effect. Weight gain during the first 3 months is high in those that quit smoking, and a high

Table 2 Smoking related parameters of participants answering the initial questionnaire ($N = 308$) stratified according to information on smoking status available 12 months after smoking cessation counseling

	Abstinent	Smoking	Unknown	Total	*P*-value
Smoking years Md [Q1–Q3]	24 [18–30]	23 [16–27]	22 [17–27]	23 [17–29]	0.094
Cigarettes/day Md [Q1–Q3]	20 [20–30]	25 [20–30]	30 [20–30]	25 [20–30]	0.208
Age at start of smoking Md [Q1–Q3]	16 [15–18]	16 [15–17]	16 [15–18]	16 [15–18]	0.197
Pack-years Md [Q1–Q3]	14 [9–23]	16 [9–22]	14 [11–24]	14 [9–23]	0.890
Fagerstroem-score Md [Q1–Q3]	5 [2–6]	5 [4–7]	5 [4–7]	5 [3–7]	0.090
Earlier attempts to quit N (%)					0.669
Never	33 (42%)	22 (28%)	23 (29%)	78	
Once	32 (46%)	18 (26%)	20 (29%)	70	
2–3 times	39 (39%)	37 (37%)	24 (24%)	100	
More often	17 (34%)	18 (36%)	15 (30%)	50	

P-values from the comparison of participants abstinent, smoking or with unknown status at that time with respect to these characteristics by Chi-square or Kruskal–Wallis tests

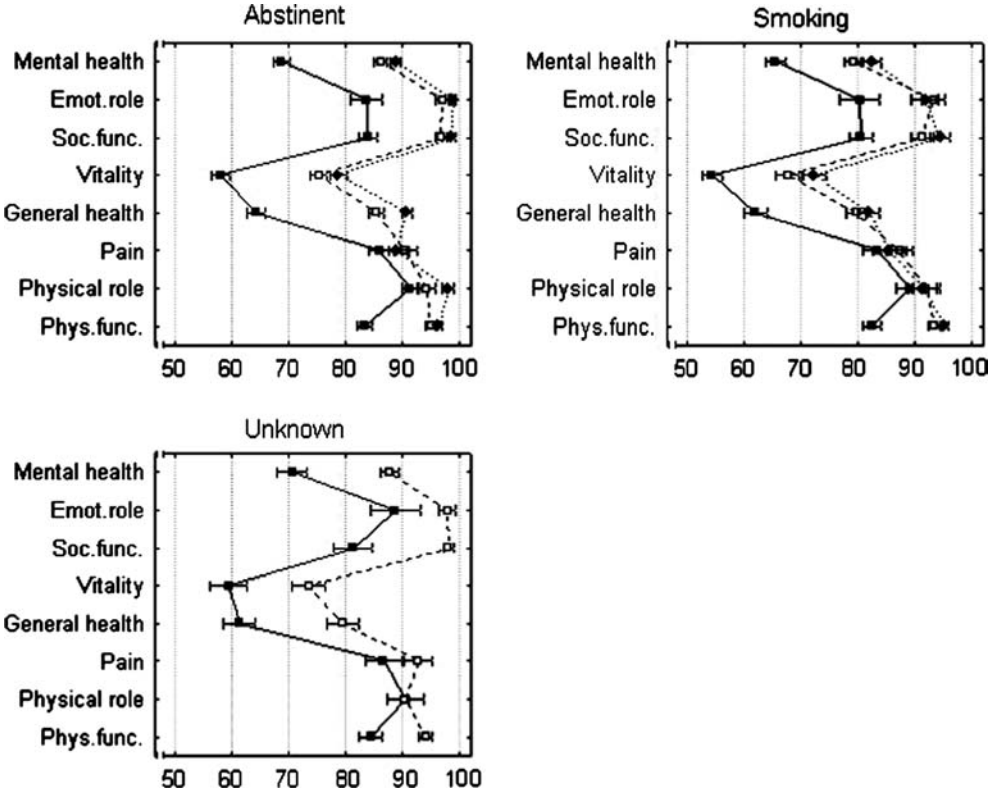

Fig. 1 Mean (± SEM) of subscores of SF36 for participants abstinent 12 months after counseling, again smoking at that time and participants with unknown smoking status. *Solid line* and *filled squares*: initial questionnaire; *broken line* and *open squares*: after 3 months (interview); *dotted line* and *filled diamond*: after 12 months (interview). Significant differences between abstinent and smoking participants at 3 months: mental health, vitality ($P < 0.01$), general health, social and physical functioning ($P < 0.05$); at 12 months all subscores except pain

proportion remained abstinent during the rest of the 1-year period. In females none of these variables predictive in males did significantly contribute to predicting the risk of smoking again after 1 year. Instead, reduced physical fitness, high Fagerstroem score and financial reasons for the intention to quit smoking were associated with failure to quit in females (Table 6).

Discussion

Frequently high smoking cessation rates are due to the selection of highly motivated persons for intervention, e.g., from the first symptoms of smoking-related disease. Cessation seminars at the workplace suffer less from this selection, having the advantage of addressing smokers in early motivational stages [9], who would not have consulted a doctor. Even under the worst case assumption that all persons not reached by phone would be smoking again, the quit rate amounted to 40% and from a more realistic estimate every second participant was abstinent 1 year after the cessation seminar. Surprised about this result we attempted to find other sources of selection bias, however, neither the type of enterprises nor the information obtained from them gave any indication for an unusual sample. According to the representatives of the employees, managers had not put pressure on staff members to participate, provided smoking rooms and did not control smoking time. None of the small to middle sized enterprises (located in five of nine Austrian

Table 3 Reasons to quit smoking (multiple choice) reported before initiation of smoking cessation counseling in relation to smoking status 12 months later

	Abstinent	Smoking	Unknown	Total	*P*-value
Health risk	95 (39%)	85 (35%)	62 (26%)	242	0.223
Health problems	27 (38%)	22 (31%)	22 (31%)	71	0.753
Financial	43 (32%)	51 (38%)	42 (31%)	136	0.046
No example to children	45 (45%)	33 (33%)	22 (22%)	100	0.238
Sports	40 (37%)	30 (28%)	37 (35%)	107	0.110
Considerations for non-smokers	37 (44%)	33 (39%)	14 (17%)	84	0.031
Social disapproval	11 (41%)	12 (44%)	4 (15%)	27	0.234
Other reasons	15 (54%)	3 (11%)	10 (36%)	28	0.032
Overall	122 (40%)	101 (33%)	85 (28%)	308	

P-value from Chi-square test comparing those who gave a specific reason against those not specifying this reason

Table 4 Body weight and body mass index (BMI) initially, after 3 and after 12 months for participants still abstinent 12 months after smoking cessation program, those again smoking and with unknown smoking status at this time

Males	Abstinent	Smoking	Unknown	Total	*P*-value (groups)
Body weight initial (kg)	86 ± 15	83 ± 12	84 ± 13	84 ± 13	0.409
Body weight 3 months	89 ± 16	84 ± 12	84 ± 13	86 ± 14	0.130
Body weight 12 months	90 ± 15	83 ± 12		87 ± 14	0.005
P-value (time)	< 0.001	0.005	0.124	< 0.001	
BMI initial	26.8 ± 3.7	25.4 ± 3.4	26.6 ± 3.7	26.3 ± 3.6	0.030
BMI 3 months	27.7 ± 3.9	25.8 ± 3.2	26.7 ± 3.8	26.8 ± 3.7	0.004
BMI 12 months	27.9 ± 3.9	25.7 ± 3.2		26.9 ± 3.7	< 0.001
P-value (time)	< 0.001	0.005	0.124	< 0.001	
Females					
Body weight initial (kg)	65 ± 13	64 ± 12	65 ± 11	65 ± 12	0.952
Body weight 3 months	67 ± 12	65 ± 11	66 ± 11	66 ± 11	0.915
Body weight 12 months	68 ± 11	64 ± 12		66 ± 11	0.145
P-value (time)	< 0.001	0.128	1.000	0.001	
BMI initial	22.9 ± 3.6	23.2 ± 3.1	23.7 ± 3.5	23.2 ± 3.4	0.678
BMI 3 months	23.3 ± 3.1	23.5 ± 3.0	23.9 ± 3.5	23.5 ± 3.1	0.877
BMI 12 months	23.9 ± 3.0	23.1 ± 3.3		23.6 ± 3.1	0.360
P-value (time)	< 0.001	0.128	1.000	0.001	

P-values for comparison of groups at the different time points (Kruskal–Wallis tests) and for comparison of time points within groups (Friedman test)

Table 5 Body weight and body mass index (BMI) initially and after 3 months in participants again smoking after 12 months stratified according to smoking status after 3 months

	Again smoking after 12 months		
	Abstinent at 3 months	Smoking at 3 months	Total
Males			
Body weight initial (kg)	84 ± 14	82 ± 11	83 ± 12
Body weight 3 months	86 ± 14	83 ± 10	84 ± 12
BMI initial	26.0 ± 3.7	25.1 ± 3.2	25.4 ± 3.4
BMI 3 months	26.8 ± 3.4	25.3 ± 3.0	25.8 ± 3.2
Females			
Body weight initial (kg)	60 ± 6	65 ± 13	64 ± 12
Body weight 3 months	64 ± 6	65 ± 12	65 ± 11
BMI initial	22.9 ± 3.4	23.3 ± 3.1	23.2 ± 3.1
BMI 3 months	24.6 ± 3.3	23.3 ± 3.0	23.5 ± 3.0

provinces) had decided to carry the complete costs of the seminars or supply working time for them, because participation to avoid work should be prevented. On the other hand, no pressure to participate was put on the workforce. The only indication of ''group pressure'' we found was in the fact that an employees' representative (after a bypass operation) had taken part in one of the seminars himself. In fact group dynamics could have been a key element in long-term success, but unfortunately this influence is difficult to control. The study lacks a control group from the same enterprises without intervention, because consent could be obtained by participants of the seminars only. During the study period, however, influences capable of changing the smoking rates of the source population (e.g., reduction of cigarette prize, enforcement of smoke-free workplace

Table 6 Results of stepwise logistic regression analysis for the prognosis of 1-year quit rate in males and females

	Prognostic parameter	Relative Risk [90% CI]
Males	Age (Years)	0.909 [0.866–0.953]
	Weight increase (kg)	0.807 [0.723–0.901]
	Pack-years	1.044 [1.007–1.082]
Females	Financial reason to quit smoking	7.401 [1.342–40.81]
	Fagerstroem Score	1.710 [1.164–2.512]
	SF-36 Physical functioning	0.947 [0.900–0.997]

Relative risks and 90% confidence interval for again smoking 1 year after smoking cessation program. Pseudo R^2 in males 0.56 and 0.62 in females

legislation) have not been detected and, unfortunately, there has been no significant trend of cessation in the general population, because politics failed[11]. The only possible selection bias we were able to detect was a higher percentage of persons living with a partner compared to the group which could not be reached by phone, but their sociodemographic characteristics and smoking parameters (cigarettes per day, pack-years, Fagerstroem score, age at initiation) were comparable.

Participants had been informed that interviews were taken by marketmind obliged to protect individual data. Nevertheless reporting bias cannot be neglected, because we were not able to validate smoking history biochemically, however, both underreporting of smoking and overreporting of relapse cannot be excluded. Participants paid part of the costs of the seminar and got a money back guarantee if the seminar and a refresher seminar fails. Only five (4%) of successful quitters and 31 (33%) of persons with relapse attended a refresher seminar. This also means that the refresher seminar was less successful than the first one, because only five (14%) of 36 participants achieved 1-year abstinence. Some participants of the refresher seminar might have been more interested in the return of their deposit than in quitting. An alternative explanation for the lower success rate of refresher seminars is of course the selection of persons prone for relapse, and we therefore think that booster sessions should be continued. From psychotherapy research, however, it is known that in general they are not very well accepted.

Additional benefits of medication can be neglected, because participants of the seminar were not encouraged to take pharmaceutical aids, only two of the successful quitters and two persons with relapse used nicotine replacement and nobody used bupropion or other medication for cessation.

Weight gain, known as a result of substitution of oral gratification during smoking cessation and hypothesized to be a cause of relapse, particularly in females, was indeed found highest among women abstinent after 3 months but smoking again after 12 months. We interpret weight gains in females of more than 2–3 kg during the first 3 months of smoking cessation as an indication that the seminar was not fully successful and should be repeated in a modified way before relapse to smoking occurs. If recommendations for exercise and diet do not meet the purpose, additional pharmacotherapy could be necessary, but care must be taken not to shift responsibility of failure to medication. In males some weight gain does not seem to be a reason for concern, but rather an indication of successful smoking cessation. Males would rather accept the fact that they have to get rid of smoking as their main risk factor first and that they will be able to reduce weight after the period of worst cravings. Both genders should know that their main risk of dying from cardiovascular disease will be halved during the first year after cessation, despite a small weight gain, however, this will be harder to accept for females because of cosmetic reasons.

While the quality of life and subjective status of health scaled by SF-36 did not differ before the seminar, successful quitters developed a better score of general health. All participants improved, which might indicate that the seminar was helpful, but leading to successful cessation in half of them only. Nevertheless, it also helped long term and partly heavy smokers who had experienced several unsuccessful attempts before.This could possibly be related to the method which seems to be capable of taking the fear from smoking cessation and bringing back joie de vivre (as reported by a participant). Most smoking cessation programs reported lower quit rates, even those at workplaces [12]. Further improvement seems possible by addressing gender-specific topics. Also for young people and certain occupational groups working as multipliers (e.g., journalists, teachers, health professionals) special courses should be developed. Another possible strategy to further increase success rates could be a quit-line on which the trainer should be able to give further advice at least for 1 week after the seminar, as most relapses occurred shortly afterwards (25% within 3 days, 46% within a week).

Conclusions

Labor unions suggested that enterprises should cover part of cessation costs to increase compliance with smoke-free workplace legislation. There is consensus that group therapy of tobacco dependence is cost-effective, but Allen Carr' seminars have not been evaluated independently before.

If offered at the workplace even this short seminar achieved a high quit rate without additional pharmacotherapy. Male participants of a higher age and with a

lower number of pack-years were even more successful. In both gender subjective life quality improved, which—besides group dynamics—may have contributed to long-term success. Especially in females, however, these seminars should be followed by physical exercise and continued efforts to support self-confidence.

Work seminars could achieve high population coverage and provide added value to other programs available. They seem to be capable of helping every second smoker who is motivated to participate.

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