Abstract of Contribution 454

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Exercise for smoking cessation: A multimethod approach for the development of effective programs.

Chair(s): **Yannis Theodorakis (University of Thessaly)**

Exercise has been considered as an effective tool for smoking prevention and importantly for smoking cessation. Nevertheless, empirical findings from exercise-based interventions have proved equivocal. Reviews on the relevant research have identified limitations focusing on the lack of theoretically driven interventions, but also methodological shortcomings. The present symposium is based on a research project aimed to address the identified issues, with the development and application of effective smoking cessation program, through experimental studies, interventions and qualitative inquiries. In particular, this symposium consists of five presentations. The first involves an experiment comparing the effects of moderate and high aerobic exercise intensity on smoking delay. The second presentation involves another experiment comparing the effects of assigned moderate and self-selected aerobic exercise intensity on smoking urge. The third presentation, involves an 8-week exercise intervention, based on the premises of the self-determination theory and the findings of the previous experiments, complemented through the use of self-regulation strategies. The fourth presentation involves a qualitative approach to the topic through the exploration of experiences from smokers participating in exercise sessions. Lastly, the fifth presentation involves the development and evaluation of a smartphone application aiming to support people who have recently quit smoking not to relapse through the use of individualized exercise-related messages for action.

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Presentations of the Symposium

Acute effects of a short bout of moderate versus vigorous intensity of exercise on smoking behavior

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The purpose of this study was to compare the effects of two different exercise intensities, moderate intensity exercise and vigorous intensity exercise, on smoking behavior. Participants were adults, non-physically active, heavy smokers (26.17 ± 9.75). Smoking delay (measuring the actual time of smoking after exercise) examined after the completion of the exercise protocol, whereas physiological measures were implemented before, during and after the completion of a 30-minutes exercise session. In addition, preferences regarding the cycling protocols (moderate and vigorous intensity exercise) were assessed on completion. Examination of the pairwise comparisons showed significant differences between the control and the moderate intensity condition ($p < .05$), and between the control and the high intensity condition ($p < .01$), but not between the moderate and high intensity conditions ($p = .28$). In the control condition participants smoke their first cigarette faster than in the two exercise conditions. Furthermore, the analysis revealed a preference for the moderate intensity exercise protocol. The results suggest that exercise can have a positive impact on smoking delay.
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Acute effect of exercise on smoking urge and preferences for assigned versus self-selected aerobic exercise intensity

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The purpose of this study was to examine whether smokers preferred a "self-selected" form of physical activity in which they were allowed to determine themselves the intensity of physical activity or preferred an "other-selected" form of physical activity in which the instructor assigned the exercise intensity for them. In addition, we examined effects of assigned and self-selected intensity exercise, on urges to smoke. Participants were 16 adults (8 males and 8 females; mean age 26.62 years), non-physically active, smokers. Results revealed that smoking urge was significantly lower immediately after exercise for both conditions. However, urge to smoke reverted back to baseline levels 30 minutes post-exercise periods and surpassed these levels 40 minutes after the completion of the physical task. Most critical, results demonstrated that smokers exhibited an enhanced preference for self-selected forms of physical activity as opposed to other-selected forms of physical activity. The implication of these findings is that smoking cessation and motivation for physical activity participation can be increased by allowing smokers select intensity of physical activity programs.
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Exercise for smoking cessation: A self-determination based intervention

Theodora Tzatzaki (University of Thessaly, Greece), Antonis Hatzigeorgiadis (University of Thessaly, Greece), Anastasia Tsiami (University of Thessaly, Greece), Vassiliki Pappa (University of Thessaly, Greece), Levanda Apostolou (University of Thessaly, Greece), Nikos Zourbanos (University of Thessaly, Greece), Ioanna Oikonomou (University of Thessaly, Greece), Nikos Hatzisarantis (Curtain University, Australia), Yannis Theodorakis (University of Thessaly, Greece)

Exercise has been suggested as an important aid towards smoking cessation. However, the relevant literature on exercise-based intervention has provided equivocal findings. Based on the premises of self-determination theory and through the use of self-regulation strategies an exercise-initiation smoking-cessation intervention was developed, implemented, and evaluated. Smokers, non-exercising, were randomly assigned into intervention (N = 16; 7 males, 9 females; mean age 39.44 years) and control groups (N = 8; 3 males, 5 females; mean age 46.00 years). Participants of the intervention group engaged in an 8-week individually tailored exercise program, assisted through the use of goal-setting, breathing exercises, and self-talk. Smoking and exercise behaviour was monitored; in addition exercise self-efficacy, self-efficacy to overcome barriers towards exercise, and smoking abstinence self-efficacy were assessed. The control group was monitored during the same period of time and completed the same measures. On completion of the intervention 10 participants had quitted smoking, whereas six had reduced the number of cigarettes they were smoking to approximately 25% of the cigarettes they were smoking at baseline. The results showed that as the frequency of exercise increased throughout the eight weeks, exercise self-efficacy, self-efficacy to overcome barriers towards exercise, and smoking abstinence self-efficacy were increased, whereas smoking behaviour declined. No changes were observed in exercise or smoking behaviour for the control group. The findings provide support for the value of exercise as a tool for smoking cessation, provide useful directions for the designing and implementation of interventions and encourage further research on the role of exercise in the fight against smoking.
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Understanding the experiences of heavy smokers on high and moderate exercise intensity in relation to their urge to smoke

Marios Goudas (University of Thessaly, Greece), Mary Hassandra (University of Jyvaskyla, Finland), Chroni Stiliani (University of Thessaly, Greece), Olympiou Alkistis (University of Lincoln, UK), Yannis Theodorakis (University of Thessaly, Greece)

Exercise is used to counteract the urge to smoke. However, it remains unclear which is the most effective type of exercise for reducing cravings as a wide range of intensities and modes;, from isometric exercise and yoga to activity as high as 80–85 % heart rate, have shown positive effects. However, the perceptions of heavy smokers regarding different exercise intensities and their effects on their urge to smoke have not been considered. The aim of this study was to understand the experiences of heavy smokers during and after a medium and vigorous exercise condition in relation to their urge to smoke. Five heavy smokers, physically inactive were asked to abstain from smoking the night before exercising on a cycle ergometer for 30 minutes at two different intensities (medium and vigorous) with a one-week interval between the two sessions. The order of exercise intensity was counterbalanced across participants. Semi structured in depth interviews were conducted upon completion of the second trial. Thematic analysis revealed 3 themes: preferred exercise intensity, urge delay, and other feelings and thoughts during and after exercise. It emerged that the i the ideal intensity, type and duration of exercise in relation to smoking urges is highly related to individuals current and past exercise history.

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Managing cravings with physical activities: A mobile App

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There is evidence that physical activity, even in small doses, acutely reduces cigarette cravings in laboratory settings. Nevertheless, data from real life settings are scarce. A free mobile smartphone application has been developed to support people who have recently quit smoking not to relapse by counter-suggesting simple physical activities. Short messages are accompanying each suggested physical activity. Both physical activities and messages are matched to the needs and preferences of individuals attempting to alter psychosocial constructs thought to directly influence behavior. Participants have been assigned randomly to 2 groups, the experimental group using the PoS app as a support tool after the quit day. Measures for both groups included abstinence rates, self-reported relapses, efficacy measures and power of control. The first part of the presentation will describe the PoS app usage and the theoretical background of the database development. The second part will present the preliminary results from initial analyses followed by a discussion on their implications.

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