



## Lifestyle counseling in overweight truck and bus drivers - Effects on dietary patterns and physical activity

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### ABSTRACT

We studied dietary patterns, physical activity (PA), and monthly goal setting in a weight reduction intervention in long-distance professional drivers. The study was conducted in Finland in 2009–2012. Male drivers with waist circumference > 100 cm were randomized to a lifestyle counseling (LIFE, N = 55) and a reference (REF, N = 58) group. During 12 months, LIFE participated in 6 face-to-face and 7 telephone counseling sessions on diet and PA. Dietary patterns were assessed using an index combining food diary and counselor interview, and PA with the number of daily steps using a pedometer. Monthly lifestyle goals, perceived facilitators and barriers, and adverse effects of PA in the LIFE participants were monitored using counselors' log books. Forty-seven (85%) LIFE participants completed the 12-month program. After 12 months, the mean dietary index score improved by 12% ( $p = 0.002$ ,  $N = 24$ ), and the number of daily steps increased by 1811 steps (median;  $p = 0.01$ ,  $N = 22$ ). The most frequent dietary goals dealt with meal frequency, plate model, and intake of vegetables, fruits, and berries. The most common PA mode was walking. Typical facilitators to reach monthly lifestyle goals were support from family and friends and ailment prevention; typical barriers were working schedules and ailments. Adverse effects, most commonly musculoskeletal pain, occurred among 83% of the LIFE participants. Positive changes in lifestyle habits were observed during counseling. Monthly lifestyle counseling combining face-to-face and phone contacts seemed appropriate to long-distance drivers. Barriers for reaching lifestyle changes, and adverse effects of PA were common and need to be addressed when planning counseling.

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### 1. Introduction

Obesity and cardiometabolic risk factors are common health concerns in professional truck and bus drivers (Sieber et al., 2014; Dahl et al., 2009; Apostolopoulos et al., 2013). Factors related to work environment and personal behavior affect drivers' lifestyle, which often

consists of long sitting periods at work, unhealthy dietary patterns, and low leisure-time physical activity (PA) (Birdsey et al., 2015; Tse et al., 2006; van der Beek, 2012; Varela-Mato et al., 2016; Wong et al., 2014). Professional drivers tend to snack; they also consume fewer fruits and vegetables and more salt and saturated fat than recommended (Jack et al., 1998; McDonough et al., 2014; Nagler et al., 2013). Irregular driving hours and working at night often characterize drivers' schedules (Tse et al., 2006; van der Beek, 2012; Marqueze et al., 2012), which may result in sleep disturbances and obesity (Marqueze et al., 2013; Hemio et al., 2015).

Despite problems in professional drivers' health and lifestyle, few intervention studies have been conducted to improve their health (Gilson

Abbreviations: BMI, body mass index; LIFE, lifestyle counseling group; PA, physical activity; REF, reference group (control).

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et al., 2016; Ng et al., 2015; Tse et al., 2006); the results have been inconclusive. A randomized controlled trial (RCT) among 1061 overweight transit workers, mostly metropolitan bus drivers, resulted in some dietary improvements, but no changes in PA or weight (French et al., 2010). A 4-month smoking cessation and weight management intervention in 227 truck drivers and dock workers, of whom 89% were overweight, showed small improvements in diet but no changes in weight (Sorensen et al., 2010). In general, men are less likely than women to adhere to lifestyle interventions (Pagoto et al., 2012); but when they start, men succeed equally with women (Young et al., 2012).

We conducted a RCT to reduce weight in overweight long-distance truck and bus drivers, using structured, individual counseling on diet and PA. Results on body weight and cardiometabolic risk have been published (Puhkala et al., 2015). In this report, we studied the effects of the structured counseling program on dietary patterns and habitual PA, assessed monthly lifestyle goals, and identified facilitators and barriers to achieving those goals.

## 2. Methods

### 2.1. Study design and participants

Our RCT was conducted in Finland in 2009–2012. A more detailed description of the study design has been reported (Puhkala et al., 2015). The main inclusion criteria were being a male truck or bus driver in long-distance service, waist circumference  $\geq 100$  cm, and being physically inactive (less than twice weekly, moderate-intensity leisure PA for 30 min). Drivers were mainly recruited by fliers in service stations, workplaces, and through labor unions.

After recruitment for 18 months, 113 eligible drivers were randomized to lifestyle counseling (LIFE,  $N = 55$ ) and reference (REF,  $N = 58$ ) groups (Fig. 1). LIFE participated monthly in counseling for 12 months aiming at a 10% body-weight-reduction. Waiting-list REF participants were instructed to follow their former lifestyle during the 12-month

period. Assessments for all participants took place at baseline and 12 months, including questionnaires, biochemical blood samples, and body weight measurement.

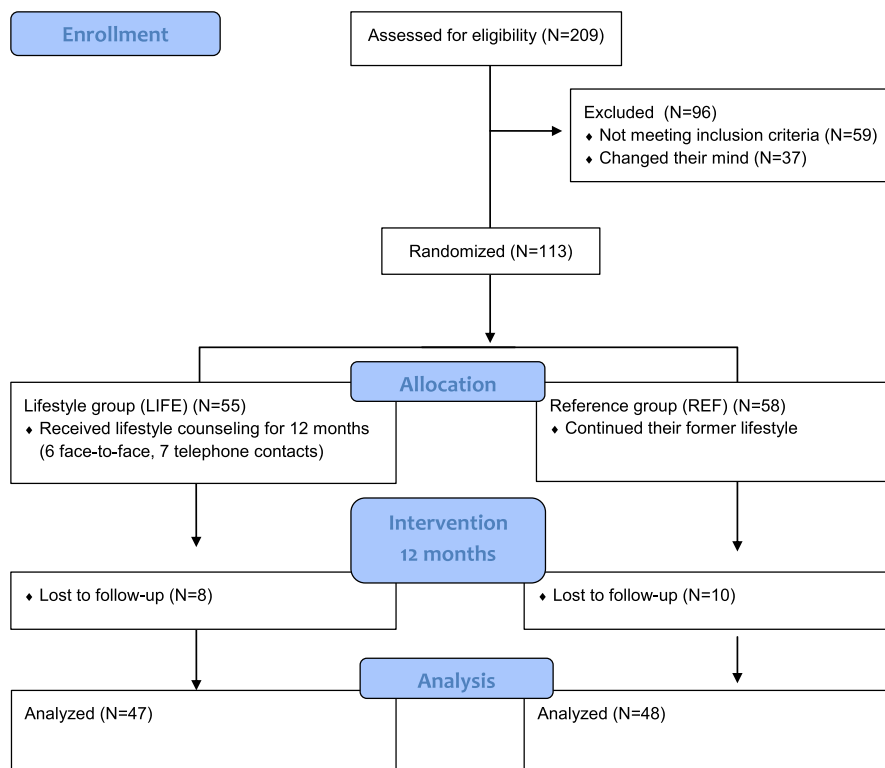
The study was reviewed by Pirkanmaa University Hospital District Ethics (Ref. number R09025). The participants completed a written informed consent. The research was conducted in accordance with the Declaration of Helsinki (2000).

### 2.2. Counseling program in LIFE

Three trained counselors conducted the program. Topics included diet and PA. The program consisted of 13 individual sessions: 6 face-to-face sessions (baseline and months 1, 3, 6, 9 and 12) with 7 telephone sessions in between. Face-to-face sessions were planned to last for 60 min, telephone sessions for 30 min. All sessions took place during participants' leisure or work breaks. The counselors traveled to meet participants for face-to-face sessions.

We used the Health Action Process Approach (Lippke et al., 2004; Schwarzer et al., 2008; Schwarzer, 2008) as the theory base for developing the program and content of the counseling. The first three sessions focused on intention building, the fourth through twelfth sessions on putting the intentions into action via planning, and the thirteenth session on maintaining the recommended actions. During each counseling session, the participant and the counselor together established dietary and PA goals for the following month. The content of the sessions is described in Table 1.

The counselors used a participant-specific notebook to follow the intended procedures and topics of the counseling sessions. The following items were assessed monthly and recorded in the notebook: weight and waist circumference; setting and reaching the dietary and PA goals; perceived facilitators and barriers to lifestyle changes; and adverse effects of PA. The participants were provided with printed material on lifestyle habits. The participants had log books to assess lifestyle habits, to plan monthly goals, and to monitor daily accomplishment of the goals.



**Fig. 1.** Flow diagram of the study. The lifestyle counseling group (LIFE) participated in 12-month lifestyle counseling program starting from baseline. Assessments took place at baseline and at 12 months. Data from weight reduction study in Finnish professional drivers in 2009–2012. The figure is adapted from Puhkala et al. (2015).

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