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Physical Exercise in Patients with Advanced Lung Cancer

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Patients with advanced lung cancer suffer of incurable disease with limited prognosis and experience multidimensional impairments during their course of disease. In the field of exercise oncology, increasing evidence previously supported the implementation of exercise programs in various cancer entities. The evidence includes mainly patients with early stage cancer and/or cancer survivors. However, there is also growing evidence that physical exercise is safe and feasible for advanced cancer patients but knowledge is limited. Also as a part of this thesis, a comprehensive literature search was carried out to provide an overview of randomized controlled physical exercise programs implemented in patients with advanced cancer undergoing palliative treatment. Six studies provided data of 590 cancer patients with advanced disease. Beneficial effects of the exercise interventions were reported for both physical and psychological outcomes. General exercise recommendation for patients undergoing palliative treatment cannot be derived from the analyzed studies due to the large heterogeneity of the applied exercise programs.

As one of the largest RCTs worldwide in patients with advanced lung cancer, the POSITIVE study (Part III) was implemented to add to current knowledge. The cross-sectional baseline analyses revealed reduced physical performance, especially in strength capacity in lower extremities and endurance. However, these results showed promising potential for a structured combined, individually tailored resistance and endurance exercise program in this patient population. The observed decrease in physical activity and exercise shortly after diagnosis supports the importance of an early implementation of exercise interventions in oncology.

The intervention program was conducted for 24 weeks in which all study patients, regardless of the study arm, were contacted once weekly by the study personnel. The results showed significant differences in strength performance after 12 weeks, especially with regard to subgroup analyses. Within the second 12 weeks and overall the 24 weeks no significant effects were observed. Patients' adherence to the exercise program differed from the first to the second 12 weeks of the intervention due to treatment and/or disease related side-effects resulting in decreasing condition.

It remains unclear why no beneficial effects on physical performance of the individually tailored exercise program have been observed in this patient population. It must be considered that the intensity of the exercise program was not efficient enough. Other reasons may be considered with regard to insufficient adherence to the exercise program in order to a lack of motivation and/or therapy-related side-effects. Nevertheless, patients' feedbacks support the importance of a complementary supplement to treatment including the exercise program and the continuous contact.

Based on the observed subgroup analyses including patients with good adherence, physical exercise should be implemented early in patients undergoing palliative treatment to support patients to maintain independent functions as long as possible.