

TIME-RELATED FEEDBACK MESSAGES FOR CHANGING ACTIVITY BEHAVIOUR OF PATIENTS WITH COPD

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ABSTRACT

Background: The promotion of physical activity in daily life is an important aspect in the treatment of COPD patients [1]. We developed a telemedicine application – the Activity Coach – that aims to increase activity levels and to balance activities over the day. Activity levels are measured using a triaxial accelerometer, and time-related feedback text messages are provided on a smartphone. The objective of this study was to investigate how COPD patients responded to the feedback messages on a short-term notice.

Intervention: Fifteen patients with COPD participated. Patients used the Activity Coach with a minimum of 4 days per week, for four consecutive weeks. During the intervention, patients received feedback text messages every two hours with advice on how to improve their activity level, based on their measured activity levels. There were three types of feedback messages: encouraging messages (e.g. “go for a walk”), discouraging messages (e.g. “sit down for a while”) and neutral messages (e.g. “keep up the good work!”).

Methods: Daily activity was assessed by accelerometry and expressed as amount of activity in counts per minute [2]. To investigate the response to the feedback messages, we compared the amount of activity 30 min before the feedback message was seen by the patient with a time interval (10, 20 and 30 min) after the message was seen by the patient. The magnitude of the response is expressed as the percentage of change.

Results: In total, 1394 feedback messages were provided to the patients, of which 35% encouraging, 51% neutral, and 14% discouraging messages. On a group level, the amount of activity significantly decreased after a discouraging message was seen: a decrease of 23% after 10 min, 25% after 20 min, and 29% after 30 min (all $p < 0.001$). After an encouraging message, the amount of activity significantly increased with 16% ($p = 0.010$) after 10 min. There was no significant increase after 20 and 30 min (resp. $p = 0.051$ and $p = 0.087$).

Conclusions: COPD patients significantly change their activity level on a short-term notice in response to time-related feedback messages provided on a smartphone. Ambulant feedback messages might therefore be a valuable component of telemedicine interventions that aim to improve activity behaviour of COPD patients.

REFERENCES

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