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# Physical impairments blur the association between physical activity and loneliness: A longitudinal study

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## Background

- Insufficient physical activity (PA) and loneliness are both important determinants of physical and mental health
- Among single older adults insufficient PA and loneliness are highly prevalent
- This study explores the association between PA, loneliness and the presence of physical impairments caused by chronic diseases among participants of the Active Plus65 intervention

## Active Plus65 Intervention

- Computer tailored healthy ageing intervention
- Aims to increase PA and to stimulate active citizenship in order to decrease loneliness
- Specific tailoring for physical impairments caused by chronic diseases
- Two self-report questionnaires
- Tailored advice on three occasions
- Online or printed delivery mode

## Methods

- Longitudinal intervention study ( $N = 548$ ; mean age =  $76 \pm 8$ )
- Assessments at baseline (T0), after three months (T1), and follow up at six months (T2)
- Multilevel Regression Analyses
- Predictor variables: weekly minutes of moderate to vigorous PA (MVPA) and the presence of physical impairments
- Outcome variable: loneliness

## Results (1)

On all measurement time points, participants with a physical impairment have a lower degree of MVPA and a higher degree of loneliness than those who are not impaired (figure 1).

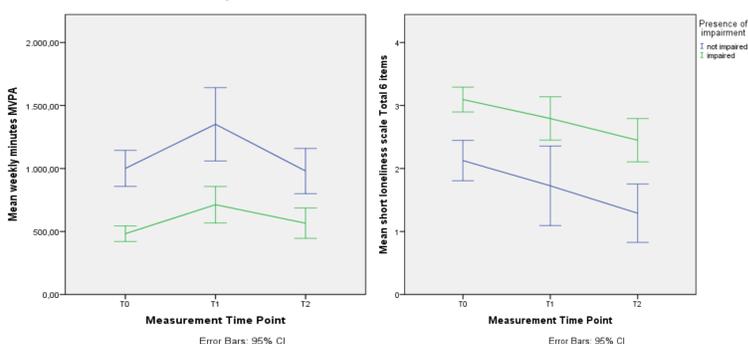


Figure 1. Development over time of both PA and loneliness for the physically impaired and not impaired.

## Results (2)

Improvements in MVPA were associated with decreases in loneliness ( $B = -0.09$ ;  $SE = 0.04$ ;  $p = 0.020$ ); this association however became non-significant when the presence of physical impairments was included in the analyses ( $p = 0.824$ ). Having physical impairments in itself was positively associated with loneliness ( $B = 0.51$ ;  $SE = 0.10$ ;  $p < 0.001$ ) (Table 1).

Table 1: Hierarchical multilevel analyses into the T0-T2 relation between physical activity and physical impairments (predictors) and loneliness (outcome variable)

	B	SE	p
<b>Model 1 (n = 548)</b>			
Minutes of MVPA	-0.09	0.04	0.020
<b>Model 2 (n = 547)</b>			
Minutes of MVPA	-0.01	0.06	0.824
Presence of impairment <sup>a</sup>	0.51	0.10	<0.001
Measurement time point	-0.15	0.05	0.001
<b>Model 3 (n = 546)</b>			
Minutes of MVPA	-0.02	0.06	0.767
Presence of impairment <sup>a</sup>	0.52	0.10	<0.001
Measurement time point	-0.15	0.05	<0.001
Gender	-0.04	0.08	0.643
Age	-0.01	0.01	0.376

<sup>a</sup> Impaired coded as 1, not impaired coded as 0

## Conclusions:

- Participants of Active Plus65 demonstrated an increase in PA and a decrease in loneliness, making it a relevant intervention for the target-population
- The significant negative association found between PA and loneliness was disrupted when the presence of physical impairments was included in the analyses
- The presence of physical impairments was positively associated with loneliness
- The in previous research often found association between PA and loneliness may have other working mechanisms than posited: it may be mainly the presence of physical impairments that dictates loneliness, and less so PA
- For long term improvements in PA and loneliness, developers of interventions should address the presence of physical impairments elaborately

## Previous publications on Active Plus65:

- Boekhout, J. M., Berendsen, B. A., Peels, D. A., Bolman, C., & Lechner, L. (2018). Evaluation of a Computer-Tailored Healthy Ageing Intervention to Promote Physical Activity among Single Older Adults with a Chronic Disease. *International Journal of Environmental Research and Public Health*, 15(2), 346.
- Boekhout, J. M., Peels, D. A., Berendsen, B. A., Bolman, C. A. W., & Lechner, L. (2017). An eHealth Intervention to Promote Physical Activity and Social Network of Single, Chronically Impaired Older Adults: Adaptation of an Existing Intervention Using Intervention Mapping. *JMIR Res Protoc*, 6(11), e230. doi: 10.2196/resprot.8093