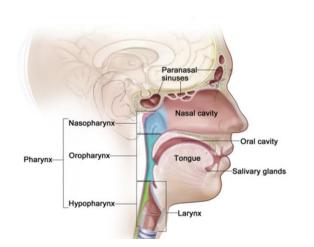


Agreement between and determinants of objective and subjective physical activity levels and their association with quality of life at the start of head and neck cancer treatment



INTRODUCTION

- ⚠ Physical activity (PA) is crucial for recovery & well-being in head and neck cancer (HNC) patients.
- ▼ Only 9–17% meet WHO PA guidelines before treatment.
- ▼ Pre-treatment PA is limited... due to fatigue, muscle wasting, reduced physical capacity, nutritional issues. especially in older adults, higher tumor stage, and lower education groups.
- Accurate PA assessment is essential given the low baseline and benefits of PA.



- Only one prior study combined objective and subjective PA assessment methods before HNC treatment, without comparing them.
- 1. How well do objective and subjective PA assessments agree?
- © 2. To what extent are these differences explained by psychological factors/physical capacity?
- **3.** How is PA related to Quality Of Life?

METHODS & RESULTS

88 HNC patients starting curative radiotherapy

OBJECTIVE PHYSICAL ACTIVITY

- < Accelerometry
- < Average min/day over 1 week



ActiGraph wGT3X-BT

SUBJECTIVE PHYSICAL ACTIVITY

- < Self-reported questionnaire
- < Average min/day over 1 week

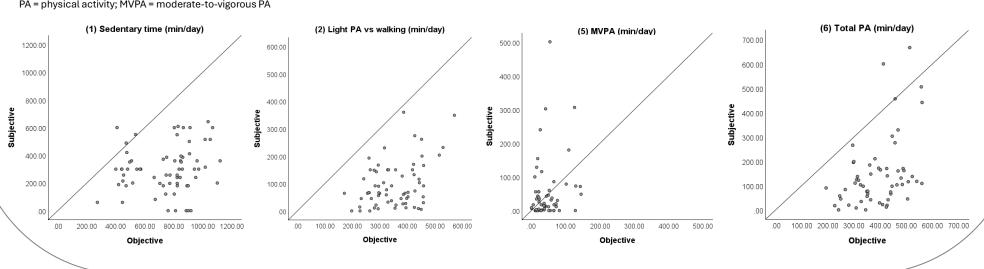


International Physical Activity Questionnaire long version (IPAQ-L)

AIM 1. Agreement between obj and subj PA?

- Intraclass Correlation Coefficients
- **Low** agreement between objective and subjective PA \rightarrow ICC range: 0.00–0.44

Figure 1: Scatterplots to visualize the agreement between objective (accelerometry) and subjective (IPAQ-L) PA assessments. PA = physical activity; MVPA = moderate-to-vigorous PA



Kom op tegen

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AIM 2. Psychological and physical determinants of obj and subj PA?

Psychological factors:

autonomous motivation, self-efficacy, readiness to change behavior (questionnaires)

Physical capacity:

6-minute walk distance (6-minute walk test)

- Regression analyses adjusted for age and BMI
- Motivation explained more variance in subjective PA.
- **Self-efficacy** = strongest predictor of subjective PA
- Readiness to change = strongest for objective PA
 Physical capacity explained 8% of objective PA.

AIM 3. Relationship between PA and Quality Of Life (QOL)?

QOL measured by EORTC QLQ-C30 v3.0

Spearman correlations

Weak and mostly non-significant correlations between PA and QOL.

Figure 2: Heatmap of the relationship between the different dimensions of QOL (EORTC QLQ-C30 v3.0) and objective/subjective PA, based on Spearman correlation coefficients and their p-values.

| Accelerometry | | | | | | IPAQ-L | | | | |
|---------------|--|--|--|---|--|---|--|---|---|--|
| Sedentary | Steps | Light PA | MVPA | Vigorous PA | Total PA | Sedentary | Walking | MVPA | Vigorous PA | Total PA |
| -0.15 | 0.24 | 0.08 | 0.26 | 0.19 | 0.18 | -0.09 | 0.21 | 0.14 | 0.07 | 0.22 |
| -0.07 | 0.18 | 0.03 | 0.28 | 0.19 | 0.13 | 0.00 | 0.28 | 0.02 | 0.21 | 0.20 |
| -0.14 | 0.05 | 0.18 | 0.09 | 0.09 | 0.21 | -0.07 | 0.20 | 0.06 | 0.08 | 0.13 |
| -0.10 | 0.07 | 0.24 | 0.00 | -0.05 | 0.22 | 0.03 | 0.23 | 0.06 | 0.08 | 0.20 |
| -0.11 | 0.00 | 0.24 | 0.03 | 0.19 | 0.26 | -0.09 | 0.06 | -0.15 | 0.07 | 0.01 |
| 0.01 | 0.11 | 0.28 | 0.11 | -0.34 | 0.29 | -0.07 | 0.12 | 0.10 | 0.02 | 0.18 |
| 0.12 | -0.11 | -0.13 | -0.13 | -0.05 | -0.17 | 0.13 | -0.23 | -0.09 | -0.04 | -0.23 |
| 0.00 | -0.10 | -0.04 | -0.15 | -0.10 | -0.10 | 0.01 | -0.19 | -0.02 | -0.03 | -0.17 |
| 0.16 | -0.02 | -0.08 | -0.02 | -0.03 | -0.07 | 0.19 | -0.19 | 0.01 | <u>-0.33</u> | -0.15 |
| | Sedentary -0.15 -0.07 -0.14 -0.10 -0.11 0.01 0.12 0.00 | Sedentary Steps -0.15 0.24 -0.07 0.18 -0.14 0.05 -0.10 0.07 -0.11 0.00 0.01 0.11 0.12 -0.11 0.00 -0.10 | Sedentary Steps Light PA -0.15 0.24 0.08 -0.07 0.18 0.03 -0.14 0.05 0.18 -0.10 0.07 0.24 -0.11 0.00 0.24 0.01 0.11 0.28 0.12 -0.11 -0.13 0.00 -0.10 -0.04 | Sedentary Steps Light PA MVPA -0.15 0.24 0.08 0.26 -0.07 0.18 0.03 0.28 -0.14 0.05 0.18 0.09 -0.10 0.07 0.24 0.00 -0.11 0.00 0.24 0.03 0.01 0.11 0.28 0.11 0.12 -0.11 -0.13 -0.13 0.00 -0.10 -0.04 -0.15 | Sedentary Steps Light PA MVPA Vigorous PA -0.15 0.24 0.08 0.26 0.19 -0.07 0.18 0.03 0.28 0.19 -0.14 0.05 0.18 0.09 0.09 -0.10 0.07 0.24 0.00 -0.05 -0.11 0.00 0.24 0.03 0.19 0.01 0.11 0.28 0.11 -0.34 0.12 -0.11 -0.13 -0.13 -0.05 0.00 -0.10 -0.04 -0.15 -0.10 | Sedentary Steps Light PA MVPA Vigorous PA Total PA -0.15 0.24 0.08 0.26 0.19 0.18 -0.07 0.18 0.03 0.28 0.19 0.13 -0.14 0.05 0.18 0.09 0.09 0.21 -0.10 0.07 0.24 0.00 -0.05 0.22 -0.11 0.00 0.24 0.03 0.19 0.26 0.01 0.11 0.28 0.11 -0.34 0.29 0.12 -0.11 -0.13 -0.13 -0.05 -0.17 0.00 -0.10 -0.04 -0.15 -0.10 -0.10 | Sedentary Steps Light PA MVPA Vigorous PA Total PA Sedentary -0.15 0.24 0.08 0.26 0.19 0.18 -0.09 -0.07 0.18 0.03 0.28 0.19 0.13 0.00 -0.14 0.05 0.18 0.09 0.09 0.21 -0.07 -0.10 0.07 0.24 0.00 -0.05 0.22 0.03 -0.11 0.00 0.24 0.03 0.19 0.26 -0.09 0.01 0.11 0.28 0.11 -0.34 0.29 -0.07 0.12 -0.11 -0.13 -0.13 -0.05 -0.17 0.13 0.00 -0.10 -0.04 -0.15 -0.10 -0.10 0.01 | Sedentary Steps Light PA MVPA Vigorous PA Total PA Sedentary Walking -0.15 0.24 0.08 0.26 0.19 0.18 -0.09 0.21 -0.07 0.18 0.03 0.28 0.19 0.13 0.00 0.28 -0.14 0.05 0.18 0.09 0.09 0.21 -0.07 0.20 -0.10 0.07 0.24 0.00 -0.05 0.22 0.03 0.23 -0.11 0.00 0.24 0.03 0.19 0.26 -0.09 0.06 0.01 0.11 0.28 0.11 -0.34 0.29 -0.07 0.12 0.12 -0.11 -0.13 -0.13 -0.05 -0.17 0.13 -0.23 0.00 -0.10 -0.04 -0.15 -0.10 -0.10 0.01 -0.19 | Sedentary Steps Light PA MVPA Vigorous PA Total PA Sedentary Walking MVPA -0.15 0.24 0.08 0.26 0.19 0.18 -0.09 0.21 0.14 -0.07 0.18 0.03 0.28 0.19 0.13 0.00 0.28 0.02 -0.14 0.05 0.18 0.09 0.09 0.21 -0.07 0.20 0.06 -0.10 0.07 0.24 0.00 -0.05 0.22 0.03 0.23 0.06 -0.11 0.00 0.24 0.03 0.19 0.26 -0.09 0.06 -0.15 0.01 0.11 0.28 0.11 -0.34 0.29 -0.07 0.12 0.10 0.12 -0.11 -0.13 -0.13 -0.05 -0.17 0.13 -0.23 -0.09 0.00 -0.10 -0.10 -0.10 0.01 -0.19 -0.02 | Sedentary Steps Light PA MVPA Vigorous PA Total PA Sedentary Walking MVPA Vigorous PA -0.15 0.24 0.08 0.26 0.19 0.18 -0.09 0.21 0.14 0.07 -0.07 0.18 0.03 0.28 0.19 0.13 0.00 0.28 0.02 0.21 -0.14 0.05 0.18 0.09 0.09 0.21 -0.07 0.20 0.06 0.08 -0.10 0.07 0.24 0.00 -0.05 0.22 0.03 0.23 0.06 0.08 -0.11 0.00 0.24 0.03 0.19 0.26 -0.09 0.06 -0.15 0.07 0.01 0.11 0.28 0.11 -0.34 0.29 -0.07 0.12 0.10 0.02 0.12 -0.11 -0.13 -0.13 -0.05 -0.17 0.13 -0.23 -0.09 -0.04 0.00 -0.10 -0.04 |

PA = physical activity; MVPA = moderate-to-vigorous PA; Correlation is **significant** when p<0.05. Correlation is **significant** when p<0.05.

CONCLUSIONS

- Subjective and objective PA assessments are not interchangeable → They capture different aspects of PA.
- Subjective PA is primarily shaped by psychological factors, while objective PA is more dependent on physical capacity and readiness to change.
- X No clear link between PA and QOL at treatment start:
 - Likely influenced by high disease burden, overshadowing PA's role.
 - Suggests that other factors may drive QOL in this early stage of treatment.