Margaret Ottesen

Can occupational physical activity among workers in home care become more evenly distributed by alternations between means of transport? A feasibility study based on the Goldilocks Work Principle

Master's thesis in Physical Activity and Health; Occupational Science
Supervisor: Marius Steiro Fimland
Co-supervisor: Ingeborg Frostad Liaset & Skender Elez Redzovic
May 2022

Master's thesis

NTNU
Norwegian University of Science and Technology
Faculty of Medicine and Health Sciences
Department of Neuromedicine and Movement Science

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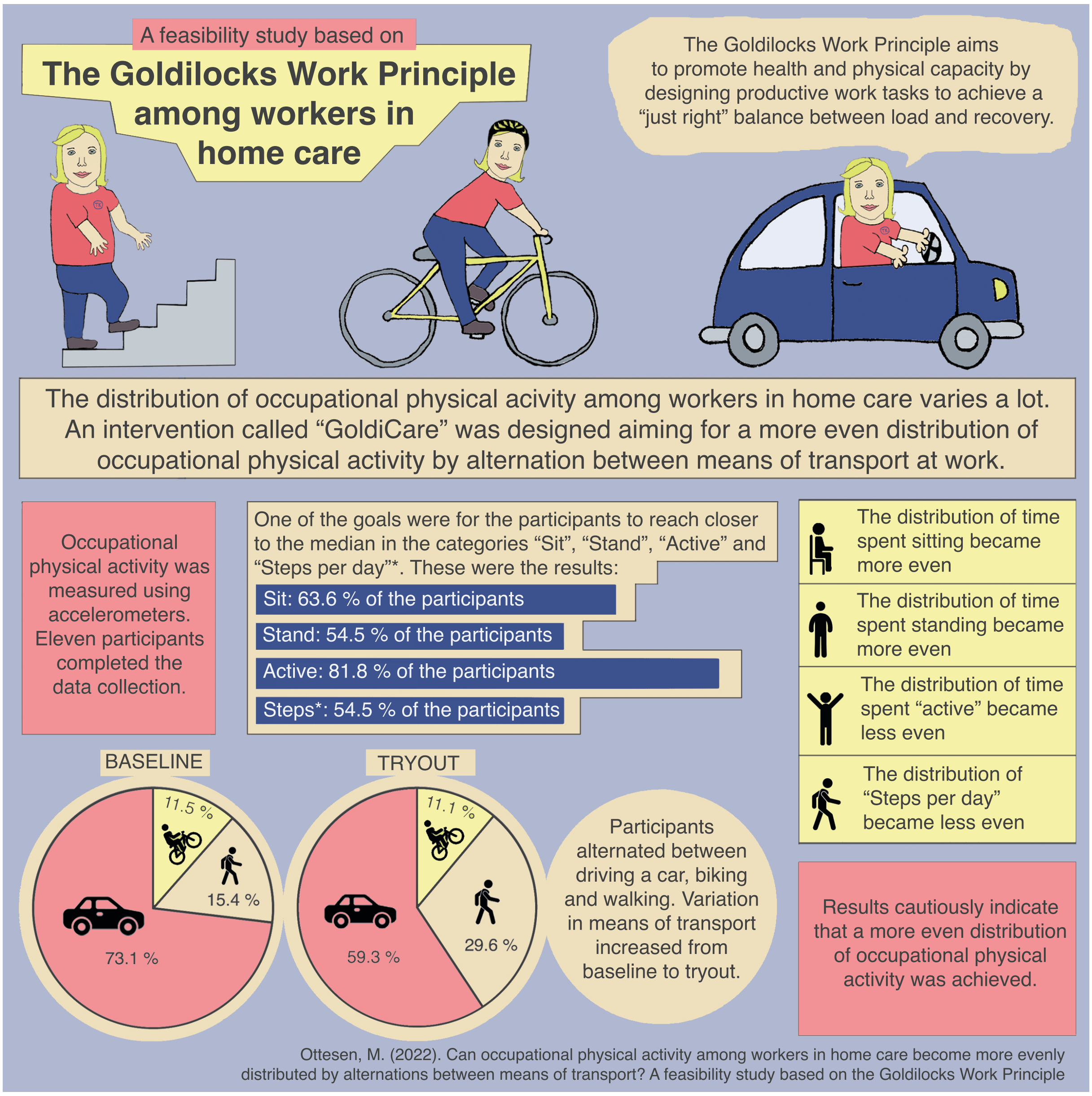
A feasibility study based on
The Goldilocks Work Principle among workers in home care
The Goldilocks Work Principle aims to promote health and physical capacity by designing productive work tasks to achieve a "just right" balance between load and recovery.
The distribution of occupational physical acivity among workers in home care varies a lot. An intervention called "GoldiCare" was designed aiming for a more even distribution of occupational physical activity by alternation between means of transport at work.
Occupational physical activity was measured using accelerometers. Eleven participants completed the data collection.
One of the goals were for the participants to reach closer to the median in the categories "Sit", "Stand", "Active" and "Steps per day"*. These were the results:
Sit: 63.6 % of the participants
Stand: 54.5 % of the participants
Active: 81.8 % of the participants
Steps*: 54.5 % of the participants
The distribution of time spent sitting became more even
The distribution of time spent standing became more even
The distribution of time spent "active" became less even
The distribution of "Steps per day" became less even
BASELINE
11.5 %
15.4 %
73.1 %
TRYOUT
11.1 %
29.6 %
59.3 %
Participants alternated between driving a car, biking and walking. Variation in means of transport increased from baseline to tryout.
Results cautiously indicate that a more even distribution of occupational physical activity was achieved.
Ottesen, M. (2022). Can occupational physical activity among workers in home care become more evenly distributed by alternations between means of transport? A feasibility study based on the Goldilocks Work Principle

Abstract

Introduction

Home care workers are exposed to high workloads increasing the risk of long-term sick leave. A study recently performed detected large differences in occupational physical activity (OPA) among home care workers. According to the Goldilocks Work Principle, productive work should be designed to achieve a balance between load and recovery that promotes workers health and fitness.

Methods

18 workers from one home care facility in Trondheim, Norway were recruited in this feasibility study. Data on OPA was collected using accelerometers (Axivity AX3) for up to seven consecutive days during baseline and tryout. An intervention was designed according to the Goldilocks Work Principle, aiming for a more even distribution of OPA among workers by alternations between means of transport. Feasibility of the intervention was evaluated by comparing baseline to tryout using descriptive analysis by; 1) investigating the distribution in means of transport between the participants, 2) investigating the distribution of time spent in the categories “Sit”, “Stand”, “Active” and steps in “Steps per day” among the participants.

Results

11 participants were included in the analysis. The number of participants with variation in means of transport increased from two (18.2 %) in baseline, to four (36.4 %) in tryout. The interquartile range (IQR) of the category “Sit” decreased by 14.5 minutes (19.1 %), the IQR of “Stand” decreased by 33.4 minutes (55 %). The IQR of the category “Active” increased by 2.2 minutes (9.6 %), and the IQR of “Steps per day” increased by 278 steps (12.5 %). On average, 63.6 % of the participants were closer to the median in the categories “Sit”, “Stand”, “Active” and “Steps per day” in tryout.

Conclusion

Some of the findings cautiously indicate that OPA was more evenly distributed among the participants in tryout. Future studies could investigate the feasibility of interventions focused on work tasks concerning direct patient contact.

Sammendrag

Introduksjon
Ansatte i hjemmetjenesten er utsatt for stor arbeidsbelastning hvilket øker risikoen for langtids sykemelding. En nylig gjennomført studie viser at det er store forskjeller blant ansatte med tanke på fordeling av fysiske eksponeringer. Ifølge "Gullhår-prinsippet i arbeid" bør produktivt arbeid organiseres slik at man oppnår balanse mellom aktivitet og hvile for å fremme arbeidernes helse.

Metode
18 ansatte fra en hjemmetjeneste i Trondheim kommune ble rekruttert i denne gjennomførbarhetsstudien. Måling av fysisk aktivitet på jobb blant deltakerne ble innhentet ved bruk av akselerometer (Axivity AX3) i opp til syv sammenhengende dager i pre-målingsperioden og i intervensjonsperioden. En intervensjon basert på "Gullhår-prinsippet i arbeid" ble utviklet med mål om en jevnere fordeling av fysiske eksponeringer blant ansatte gjennom veksling i bruk av transportmiddel. Gjennomførbarheten av intervensjonen ble evaluert ved å sammenligne pre-målingene med intervensjonsperioden gjennom deskriptive analyser ved å; 1) undersøke fordelingen i bruk av transportmiddel mellom deltakerne 2) undersøke fordelingen av tid brukt i kategoriene "Sitte", "Stå", "Aktiv" og av antall "Skritt per dag" blant deltakerne.

Resultat
11 deltakere ble inkludert i analysen. Antall deltakere med variasjon i bruk av transportmiddel økte fra to (18.2 %) i pre-målingsperioden, til fire (36.4 %) i intervensjonsperioden. Variasjonsbredden i kvartiler i kategorien "Sitte" ble redusert med 14.5 minutter (19.1 %), mens i kategorien "Stå" ble den redusert med 33.4 minutter (55 %). Variasjonsbredden i kvartiler i kategorien "Aktiv" økte med 2.2 minutter, og i kategorien "Skritt per dag" økte den med 278 skritt (12.5 %). I gjennomsnitt var 63.6 % av deltakerne nærmere medianen i tid brukt sittende, stående, aktiv og i antall skritt per dag i intervensjonsperioden.

Konklusjon
Noen av funnene kan indikere at fysiske eksponeringer ble noe jevnere fordelt blant deltakerne under intervensjonsperioden. Videre forskning kan undersøke effekten av intervensjoner knyttet til arbeidsoppgaver utført i forbindelse med direkte pasientkontakt.

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Table of contents

Infographic………………………………………………………………………...…….. v

Abstract…………………………………………………………………………..…...... vi

Sammendrag…………………………………………………………………..….. vii

Acknowledgements……………………………………………………………..…... viii

Table of contents………………………………………………………………….… ix

1. Introduction……………………………………………………………………….. 10

2. Methods…………………………………………………………………….…... 12
    2.1 Participants…………………………………………………………….…… 12
    2.2 Inclusion and exclusion criteria………………………………………..……... 13
    2.3 The process of designing the GoldiCare intervention…………………………… 13
    2.4 Data collection…………………………………………………………... 14
    2.5 Data processing…………………………………………….…………… 15
    2.6 Statistical methods……………………………………………………..…… 15

3. Results…………………………………………………………………………..... 16
    3.1 Participant flow…………………………………………………………….. 16
    3.2 Participant characteristics……………………………………………….... 17
    3.3 Workday characteristics…………………………………………............ 18
    3.4 Compliance………………………………………………………………… 18
    3.5 Distribution in means of transport…………………………………………….. 18
    3.6 The distribution of physical exposures…………………………………………… 19

4. Discussion………………………………………………………………………… 21
    4.1 Comparison with previous research………………………………………….... 21
    4.2 Practical implications………………………………………………………… 23
    4.3 Strengths and limitations……………………………………………………… 23

5. Conclusion…………………………………………………………………….. 25

References…………………………………………………………………………… 26

Appendix A……………………………………………………………………….. 31
Appendix B……………………………………………………………………….. 33
Appendix C……………………………………………………………………….. 35
Appendix D……………………………………………………………………….. 38
Appendix E……………………………………………………………………….. 40

1. Introduction

Home care workers deliver healthcare services as well as assistance in activities of daily living to patients living at home. Work tasks encompasses activities ranging from preventive health care to palliative care, with the goal of contributing to the functional health status and quality of life of the patients (1). In Norway, home care services have had a substantial growth in demand in recent years, which is expected to expand further in the coming years largely due to the aging population (2, 3) and a shift from acute hospital services to primary care (4, 5). At the same time, retaining workers in eldercare services and ensuring they have good working conditions are challenging (6, 7). Several studies report that home care workers are exposed to a high workload (5, 6, 8-10). Work has become more demanding as patients are discharged from hospitals at an earlier stage of recovery, additionally, working conditions are perceived to be physically strenuous, as well as stressful (6, 10, 11). High workload in the form of perceived physical exertion is a risk factor for long-term sickness absence among healthcare workers (12, 13).

Strong evidence supports that regular physical activity (PA) has beneficial health effects and lower the risk of many chronic diseases (14-16). However, many workers in occupations with physically demanding tasks have relatively poor health, they do not seem to benefit from the PA performed at work (17). Several studies have found that occupational physical activity (OPA) does not provide beneficial health effects, that in fact, OPA can affect health negatively. High levels of OPA have been associated with elevated levels of inflammation (18), a higher risk of ischemic heart disease among women (19), and an 18 % increased risk of all-cause mortality in men (20). Work-related mechanical exposures are risk factors for musculoskeletal disorders (21, 22), and long-term sickness absence (23). Whereas more time spent sedentary at work has been associated with higher cardiorespiratory fitness among workers exposed to high OPA (24). The opposing health effects of OPA and leisure time PA has been termed the "Physical activity health paradox" (17, 25). Several explanations as to why OPA is not health promoting have been proposed. Some characteristics separating OPA from leisure time PA are that OPA is performed over a longer period of time, that there is often not sufficient recovery time in OPA, and that OPA is of a too low intensity for improving cardiorespiratory fitness and health (17, 26). The World Health Organization recommends integration of health promoting measures in the workplace to develop and maintain healthy lifestyle practices (27). Workers in home care frequently report musculoskeletal pain and are among the professions in Norway with the highest sick leave due to musculoskeletal disorders (28, 29). Thus, there is a potential for improving the health of home care workers through workplace initiatives focusing on health promotion.

Various workplace interventions have been attempted in the home care sector. These interventions have focused on changing specific behaviors, increasing the individuals' skills, education and training, introduction of new technology and digitalization, organizational change, avoidance of injuries, scheduling (30) and interventions aimed at reducing time pressure (10). However, interventions aiming at improving work conditions have not succeeded in reducing the rate of sick leave (10).

The Goldilocks Work Principle provides a new approach to OPA, aiming to promote health and physical capacity by designing productive work tasks to achieve a “just right” balance between load and recovery (31). One way to design work tasks according to the Goldilocks Principle is to promote exposure variation within workers (32). Workers who are sedentary most of the workday may benefit from having more periods of being active, while workers that are active most of the workday may need more time for restoration (31). Designing work in this manner has the potential to reach all workers, which in turn, if proven effective can help address issues such as an aging workforce, help workers maintain their physical capacity, and enable people to maintain employment (31, 32). There is currently no common agreement on what the “just right” distribution of physical demands at work should be to provide positive health effects (31, 33). Interventions designed according to the Goldilocks Principle must be based on the characteristics of the relevant workplace, as well as the individual worker (32). Another important aspect is to actively include the workers in developing and implementing the modifications to productive work (32, 33). The feasibility of interventions designed according to the theory of the Goldilocks Principle has been tested in Denmark among industrial workers, and childcare workers (33, 34). However, no large-scale interventions have been conducted yet (32, 33). To the author´s knowledge, the feasibility of implementing an intervention according to the Goldilocks Principle has not been tested in a home care setting before.

Work tasks in home care consist of activities that can be grouped into two categories, direct patient contact which is time spent with the patient, and indirect patient contact which consists of indirect patient activities as well as activities not related to the patient (5). Workers in home care assist patients in their homes, which implies the workers need to use some form of transport to get from one patient to the other. Transportation is a time- consuming indirect patient activity which accounted for 22-30 % of the total worktime in one study (5), while in another study it accounted for 18-25 % of the total worktime (9). Differences in time use may be explained by the location and settlement pattern of the home care facilities (5), which demonstrates that time consuming activities vary from one facility to another.

Studies on OPA have mostly been conducted by applying self-reported measures (35, 16). Questionnaires measuring PA have shown to have methodologic limitations resulting in inadequate validity and reliability (36, 37). Methods for measuring OPA objectively providing measurements of physical exposures over time are recommended in occupations with varying tasks (35, 37, 38). Accelerometers can provide objective measurements of different PA exposures (39), monitoring 24-hour movement behaviors, over multiple days (40). This can avoid the overestimation of vigorous PA and underestimation of sedentary behavior that has been associated with questionnaires (41). There are, however, challenges regarding device-based measures concerning occurrence of miscalculation due to incorrect distinguishment between positions such as lying, sitting, and standing still (16). A study recently performed investigating objectively measured physical exposures using accelerometers found that, on average, home care workers spend almost half the workday in light and moderate to vigorous activities (stand, move, walk, run, stair-climbing, cycle), while the other half is spent in sedentary behavior (42). Another study detected that physical workload was quite unevenly distributed among workers in home care, suggesting that 29 % of the participants were exposed to workloads that could lead to risks of impaired health (43).

The results of the study by Tjøsvoll et al. (submitted 2022) identified an issue relevant for developing an intervention based on the Goldilocks Principle, namely bridging the gap in the distribution of OPA among workers in home care. In collaboration with the workers, an intervention was developed and implemented in one home care facility in the municipality of Trondheim, Norway. The intervention was designed so that workers would alternate between the use of different means of transport at work with an aim of providing a more even distribution of OPA among the workers. The feasibility of the intervention was evaluated by comparing baseline measurements to tryout by; 1) investigating the distribution in means of transport between the participants, 2) investigating the distribution of time spent in the categories "Sit", "Stand", "Active" (walking, moving, running, cycling and stair-climbing), and steps in "Steps per day" among the participants.

2. Methods

This feasibility study was conducted at one home care facility in the municipality of Trondheim, Norway. In 2019 there were a total of 12 home care facilities delivering health care services to 2626 patients living within this municipality (44). The data collection took place in September to November 2021, whereas baseline measurements took place over the course of five weeks, and tryout measurements were collected over the course of four weeks, with two weeks break in between baseline and tryout. As the data collection took place during the Covid 19 pandemic, measures were taken to prevent spread of the virus, following the guidelines of the Norwegian Directorate of Health. Workers were provided written and oral information about the feasibility study prior to the initiation of the data collection. Those who volunteered to participate signed an informed consent form in accordance with the Helsinki declaration prior to commencing baseline measurements. The study was approved by the Regional Committee for Medical and Health Research Ethics in Norway (Appendix A).

2.1 Participants

Workers from one home care facility were asked to participate in the study. All but two of the 39 workers who were found eligible for participation had an educational background within health care. The two workers who did not have a degree within health care were currently conducting their apprenticeships to become health workers at the home care facility. Work tasks in home care consist of delivering health care services to individuals living at home, such as helping patients conduct activities of daily living, maintain personal hygiene and nutrition, administrate medicine, as well as observing and evaluating changes in the patient´s health status. Work in home care also consists of tasks that do not involve direct patient contact such as documentation, transportation, and interdisciplinary work (5, 9). The final analysis consisted of data collected on 11 participants, however, all the 39 eligible workers at the home care facility participated in the intervention.

2.2 Inclusion and exclusion criteria

Workers with ≥50% employment who had direct contact with patients and who used some form of transport during the workday were included in the study. Exclusion criteria were: 1) Physical disability hindering normal physical activity, 2) fever and/or sickness on the day of attaching the accelerometer, 3) adhesive tape allergy, and 4) pregnancy. Additionally, employees whose main tasks were administrative office work were excluded from participating in the data collection, because these work tasks did not involve any use of transport.

2.3 The process of designing the GoldiCare intervention

Prior to developing the intervention, physical exposures and the connection between physical capacity and physical strain at work was assessed (42, 43). Next, all workers who were available at the given time were invited to participate in a workshop arranged at three different home care facilities to share ideas on modifications that could be implemented to productive work. Based on information from these workshops and the previous assessments, an intervention called "GoldiCare" was designed with an aim of providing a more even distribution of OPA among the workers by alternations between use of transport at work.

2.3.1 Workplace intervention

The workers were each assigned one worklist, of which there were 16 in total during a normal dayshift. A worklist contained information on which patients the workers were to visit during the workday and what type of help the patients needed. The geographical distances that needed to be covered in the course of a dayshift varied between the worklists, however, 11 of the lists were designated for driving a car, while 5 of the worklists were meant for walking or biking from one patient to another. Workers in the home care facility had 11 cars, 3 electrical bicycles and one electrical scooter at their disposal. Workdays consisted of dayshifts and evening shifts on weekdays and weekends, of which the workers alternated between. Evening shifts and shifts in the weekend consisted of fewer worklists, which meant that all workers had access to a car. It was therefore decided that the intervention would only be executed on dayshifts on weekdays.

The intervention, "GoldiCare", was designed with an aim of providing a more even distribution of OPA among the workers by assigning them to worklists with different means of transport throughout the weeks of tryout. Transport was either categorized as "active" or "passive". Walking and using an electric bike were categorized as "active", whereas driving a car and using an electrical scooter was categorized as "passive". The intervention was to be implemented by the coordinators working in the home care facility, who´s main responsibility was to organize and plan the worklists.

2.3.2 The intervention-tool

A work tool was developed in excel to help the coordinators (one coordinator working full time, and one working as a substitute) in the home care facility to implement the intervention (Appendix D). The tool provided the coordinators with an overview of each worker from Monday to Friday as well as options to plot inn whether the worker would be assigned to a worklist with "passive" or "active" transport. It was also possible to plot in evening shifts, or days off work. The tool was designed with an option to write comments, for example, if an employee spent the day doing office work.

Parameters for the tool were set with an intention of workers alternating between "active" and "passive" transport during the weeks of tryout (Appendix E). The parameters included these determinants: 1 dayshift= max 1 day of active transport, 2 dayshifts= max 2 days of active transport, 3 or 4 dayshifts= at least 1 day of active transport and max 3 days of active transport. None of the participants had 5 or more valid workdays either during baseline or tryout.

To prevent bias due to participants altering their normal behavior in the baseline period, the workers in the home care facility were not informed of the details of the intervention until after baseline measurements had been collected. A meeting was then held at the home care facility where the tool was presented to one of the two coordinators, one shift planner as well as one head of department. The coordinators received information via email prior to the meeting containing a manual on how to use the tool so that they could familiarize themselves with it beforehand (Appendix D). During the meeting, instructions on how to use the tool and information on the parameters that were set were given, as well as it was ensured that they understood how to operate the tool correctly. Also, it was underlined that the coordinators could contact the researchers responsible for the development of the tool if necessary. The coordinators had been asked to save the data on the worklists for each worker during the five weeks of baseline. After the baseline measurements had been collected, information from the worklists on "active" and "passive" transport was plotted into the tool by the coordinators. At the end of each week when all the information on passive and active worklists of the workers had been plotted in the tool, a score (maximum score was 100 %) was given. The score indicated to what extent the workers had met the criteria of the parameters of the tool. It was also possible to see the outcome of each individual worker.

2.4 Data collection

Within the course of the baseline period, each participant filled out a questionnaire collecting information on age, sex, work title, education, previous and current smoking habits, self-perceived health, workability, musculoskeletal pain during at least three continuous months the last year and bodily pain (Appendix C). Measurements of height and weight were collected at baseline using a wall mounted SECA 206 measuring tape (SECA Medical Measuring Systems and Scales, Birmingham, UK) and a standardized digital bodyweight scale, respectively.

2.4.1 Physical exposures, accelerometer measurements

Physical exposures were recorded at baseline and tryout using one Axivity AX3 (Newcastle Upon Tyne, UK) accelerometer mounted on the dominant thigh of the participants using double sided adhesive tape and medical tape. The sensor was placed on the front of the thigh on the rectus femoris, approximately 10 cm above the top of the patella. It was set to record at a sampling frequency of 25 Hz and a range of ± 8g, for 7 consecutive days. Participants filled out an activity diary during the data collection periods, both during baseline and tryout, recording information on wake-up time, sleep time, start of workday, end of workday, as well as which form of transport they used at work (Appendix B). In addition to this, they reported non-wear time of the sensor if applicable, days off work and the time of detaching the sensor. Baseline measurements with accelerometers were collected over the course of five weeks, while tryout measurements were collected over the course of four weeks, with a two week break in between baseline and tryout.

2.5 Data processing

Data from the accelerometers were downloaded using Axivity software (AX3-GUI, OmGui software version 1.0.0.43). A custom-made MATLAB software (Acti4, developed by The National Research Centre for the Working Environment, Copenhagen Denmark and Department of Work and Health, Federal Institute for Occupational Safety and Health, Berlin Germany) was used to process the data (45). The Acti4 software calculated steps per day, identified physical behaviors and classified them into time spent sitting/lying, and standing. It also recognized time spent in the activities walking, moving (standing with small movements), running, cycling and stair-climbing, time spent in these categories were combined into a new category which was called "Active". The data was partitioned into periods of working hours, leisure time and sleep based on the activity diaries. Information on means of transport used at work (car, walk, bike, electrical scooter, or office day) was also registered based on information from the activity diaries. Weekend, evening shifts and shifts registered as "office days" were removed before further analysis.

Participants with accelerometer data on at least one valid dayshift in both baseline and tryout with a minimum of 4 hours of continuous measurements per dayshift were included in the analysis. All the dayshifts were standardized to 7.5 hours, which is the normal duration of a dayshift in home care. The data in the categories "Sit", "Stand", "Active" (time spent in one activity/duration of dayshift*7.5= standardized workday) and "Steps per day" (steps/duration of dayshift*7.5= standardized workday) was adjusted according to the standardized workday. A new dataset was created, consisting only of information on physical exposures during work hours on valid dayshifts with a standardized workday of 7.5 hours split into baseline and tryout. The dataset was carefully checked to prevent any "office days" from being included. Dayshifts containing less than 2000 steps per day as well as dayshifts consisting of 6 hours or more of sitting were characterized as "office days" and were therefore invalid and removed from the dataset. The data was also checked to ensure that the different activities recorded added up to the total work time (sit + stand + active = 7.5 hours) and then adjusted to minutes (7.5 hours*60 minutes= 450 minutes).

2.6 Statistical methods

Due to the small sample size, only descriptive statistics were used to compare baseline and tryout workdays. Tests for normal distribution revealed outliers in the categories "Sit", "Stand", "Active" and "Steps per day" and that the data was not normally distributed. Tests were performed using IBM SPSS Statistics version 27.

To address the aim of providing a more even distribution of OPA among the workers, the feasibility of the intervention was first evaluated by investigating whether the distribution in means of transport between the workers would increase in tryout compared to baseline. This was done by analyzing the results from the tool which were presented as the mean score of the tool measured in percent, number of participants and percentages of the total population. Variation in use of "active" and "passive" transport from baseline to tryout was also compared and presented as percentages, number of participants, and percentages of the total population.

Secondly, the feasibility of the intervention was evaluated by investigating the distribution of time spent in the categories "Sit", "Stand", "Active" (walking, moving, running, cycling and stair-climbing), and steps in "Steps per day" among the participants by comparing baseline accelerometer measurements to tryout. This was done by comparing the interquartile range (IQR) of the mean results of each participant in the categories "Sit", "Stand", "Active", and in "Steps per day", presented as the difference in minutes and percentages from baseline to tryout. Accelerometer measurements in baseline and tryout were also compared to see how many participants were closer to the median in minutes and percentages of minutes spent sitting, standing and active and steps in the category "Steps per day", presented as number of participants and percentages of the total population.

Demographic characteristics of the participants consisted of both categorical data which were presented as number of participants and percentages of the total population, and numerical data which were presented by group means with standard deviation (SD).

3. Results

3.1 Participant flow

Altogether 39 eligible participants were identified, whereas 18 participants volunteered to participate and signed the informed consent form (Figure 1).

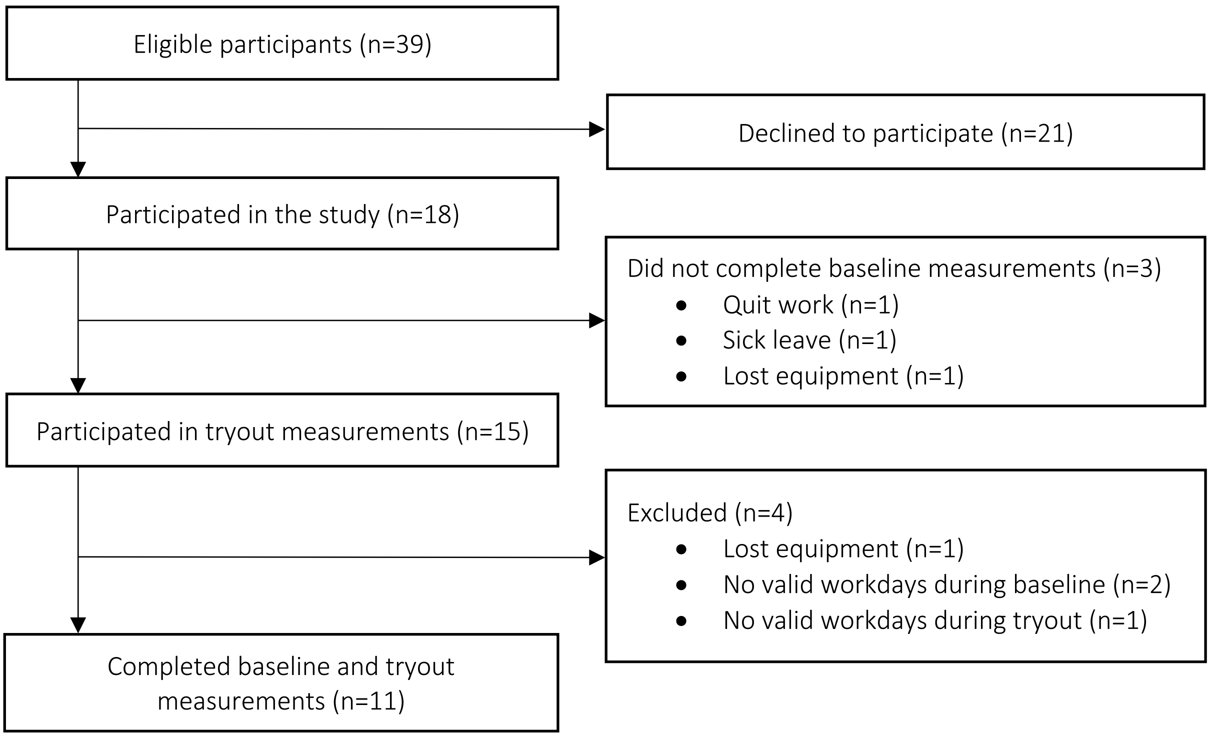


Figure 1. Flowchart of participants

Seven workers were excluded from participating in the study. One due to sick leave during the data collection, two workers did not return equipment, one worker quit halfway through the data collection, and three workers (two during baseline, and one during tryout) did not have any dayshifts with either "passive" or "active" transport. Finally, 11 participants were successfully recruited and completed the data collection.

3.2 Participant characteristics

Workers participating (n=11) were predominantly female (81.8 %), mean age was 37 years (SD 14.4) with a high or medium high educational level (90.9 %) and most of them were 100 % employed (81.8 %) in home care (Table 1). The participants reported to have good self-perceived health. When responding to whether they experienced bodily pain, 27.3 % of the participants reported to have no pain, 27.3 % reported to have very weak pain, 36.4 % reported to have moderate pain and one participant did not respond to the question. There were 54.5 % of the participants who reported that they had not experienced musculoskeletal pain during at least three continuous months the last year, while 45.5 % reported that they had experienced it. According to BMI (body mass index, kg/m^2), 54.5 % were normal weight, 27.3 % were overweight and 18.2 % were obese. All the participants had an educational background within health care, however in different disciplines.

Demographic characteristics	**N (%)**	**Mean (SD)**
Age		37 (14.4)
BMI		25.4 (5.5)
Sex		
Female	9 (81.8)	
Male	2 (18.2)	
Educational level		
Low*	1 (9.1)	
Medium**	3 (27.3)	
High***	7 (63.6)	
Work title		
Health worker	4 (36.4)	
Nurse	3 (27.3)	
Occupational therapist	2 (18.2)	
Physiotherapist	1 (9.1)	
Other	1 (9.1)	
Smoking status		
Have never smoked	7 (63.6)	
Smoked occasionally before	4 (36.4)	
Employment status		
100% employment	9 (81.8)	
70-90% employment	2 (18.2)	
Health		
Self-perceived health****		2.0 (0.5)
Bodily pain*****		2.5 (1.4)
Current work ability******		8.2 (2.1)

Table 1. Demographic characteristics of participants (n=11). BMI= Body mass index, SD= Standard deviation. *Until 3 years in high school. **Certificate of completed apprenticeship or advanced craft certificate. ***College/university. ****0=Poor, 3=Very good. *****1=No pain, 6=Very strong pain. ******0=No ability to work, 10=Best ability to work.

3.3 Workday characteristics

Accelerometer data was collected for 26 dayshifts in baseline and 27 dayshifts in tryout. The number of hours registered per valid dayshift varied from 4.5 to 8.2 hours. This was accounted for by standardizing all the dayshifts to 7.5 hours. Accelerometer data on four whole days and 14 hours distributed on four days were excluded due to being identified as "office days", of which one day was in baseline and three days and 14 hours were in tryout. The mean time spent in the physical exposures "Sit", "Stand" and "Active" were approximately the same when comparing baseline and tryout. Mean time spent sitting during a workday was 46.7 % during baseline and 47.3 % during tryout. Mean time spent standing was 29.6 % during baseline and 29.3 % during tryout. Mean time spent in the category "Active" was 23.7 % during baseline and 23.4 % during tryout. Mean steps per day were 5969 steps during baseline and 6198 steps during tryout. The mean number of valid dayshifts registered for each participant in baseline was 2.4, while during tryout it was 2.5.

3.4 Compliance

All the 11 participants reported in their activity diary which means of transport they used at work. Missing information on means of transport was identified in four dayshifts, two in baseline and two in tryout. In these cases, information on means of transport was collected from the excel tool. One participant reported to have used their private car on a day the participant had been assigned to "active" transport, the reason being that the participant was used to driving at work and did not want to walk or use a bike.

3.5 Distribution in means of transport

3.5.1 Results from the tool

During the five weeks of baseline, the mean score of the tool was 78.2 % (maximum score was 100 %). During the four weeks of tryout, the mean score was 92.3 %. According to the parameters developed for the tool, nine participants (81.8 %) reached the goal in combination of "active" and "passive" transport. This was an improvement from baseline, where seven participants (63.6 %) achieved the same. The two participants (participant 2 and 4) who did not reach the goal in combination of "active" and "passive" transport in tryout had too many dayshifts with "passive" transport.

3.5.2 Variation in means of transport

Information gathered from the self-reported activity diary and from the excel tool show that a greater variety in means of transport was reported during the tryout period compared to baseline (Figure 2). "Passive" transport decreased from 73.1 % of the dayshifts in baseline to 59.3 % in tryout, while "active" transport increased from 26.9 % in baseline to 40.7 % of the dayshifts during tryout.

Although the variation in means of transport increased from baseline to tryout, there weren't profound changes in the distribution of the various means of transport between the participants. In baseline, two participants (18.2 %) had variation in means of transport, whereas in tryout, four participants (36.4 %) had variation in means of transport. The results were influenced by three participants (one in baseline and two in tryout) who each had one valid workday and could therefore not achieve variation in means of transport.

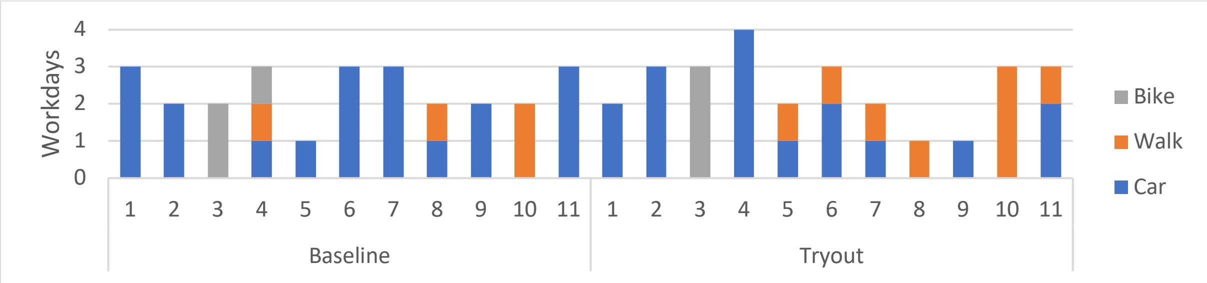


Figure 2. Means of transport. This figure shows a representation of what type of transport was used by the participants throughout the dayshifts during baseline and tryout. The x-axis represents the participants (n=11). None of the participants used an electrical scooter.

3.6 The distribution of physical exposures

3.6.1 Interquartile range

The IQR (Table 3) decreased from baseline to tryout in the categories "Sit" by 14.5 minutes (19.1 %) and in "Stand" it decreased by 33.4 minutes (55 %). However, it increased in the categories "Active" by 2.2 minutes (9.6 %) and in "Steps per day" by 278 steps (12.5 %).

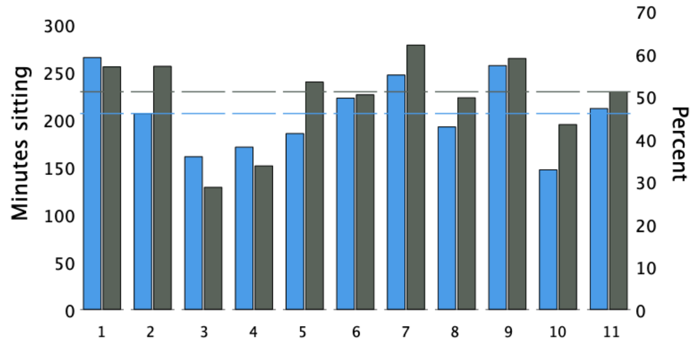
	Baseline				Tryout			
Categories	Median	25th percentile	75th percentile	IQR	Median	25th percentile	75th percentile	IQR
Sit min/day	206.4	171	246.9	75.9	229.3	194.7	256.1	61.4
Stand min/day	141	98.1	158.8	60.7	110	99.6	126.9	27.3
Active min/day	102.7	95.1	118	22.9	100.4	91.9	117	25.1
Steps per day	5878	5202	7433	2231	5766	5286	7795	2509

Table 3. Descriptive data. This table displays data from baseline and tryout on time spent in the categories "Sit", "Stand", "Active" and steps in "Steps per day" (n=11). Min/day= minutes per day. IQR= Interquartile range.

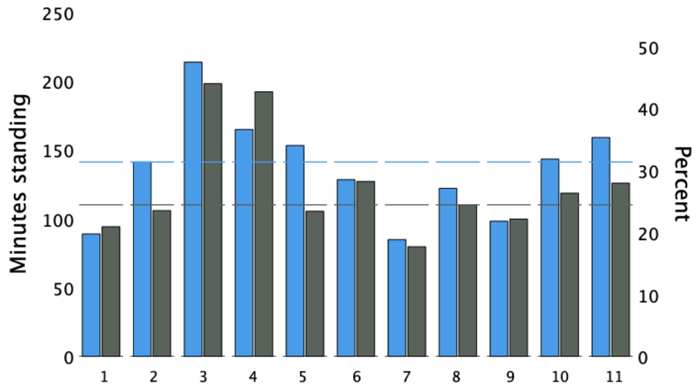
3.6.2 Participants closer to the median

The results presented in Figure 3 A-C illustrate the mean minutes as well as mean percentage of time spent by each participant in baseline and tryout in the categories "Sit", "Stand" and "Active". In the category "Sit", seven participants (63.6 %) were closer to the median in tryout compared to baseline (Figure 3 A). In the category "Stand", six participants (54.5 %) were closer to the median in tryout compared to baseline, additionally, three of the participants (participant 2, 6 and 10) were close to the median in both baseline and tryout (Figure 3 B). In the category "Active", nine participants (81.8 %) were closer to the median in tryout compared to baseline (Figure 3 C). In the category "Steps per day", six participants (54.5 %) were closer to the median in tryout compared to baseline, additionally, three of the participants (participant 2, 4 and 9) were close to the median in both baseline and tryout (Figure 3 D).

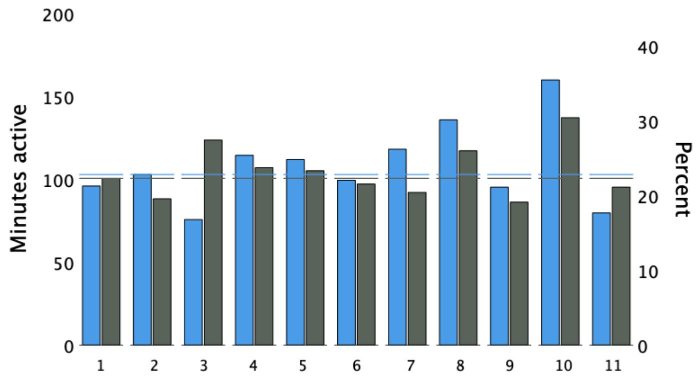
3 A.



B.



C.



D.

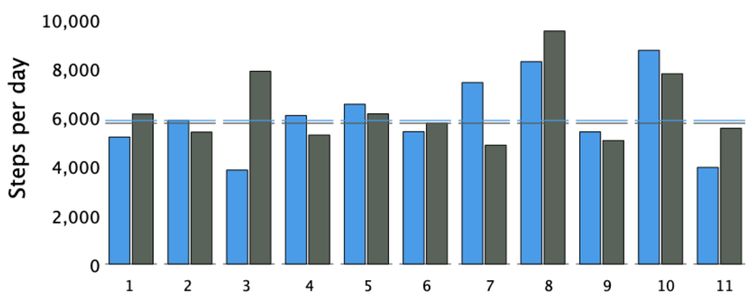


Figure 3 A-D. Distribution of physical exposures. Blue bars= baseline. Dark gray bars= tryout. The blue horizontal lines represent the median during baseline. The dark gray horizontal lines represent the median during tryout. Figure 3 A-C: Each participant (1-11) is represented by two bars showing their mean time per day spent sitting, standing and active (walking, moving, running, cycling and stair-climbing) in minutes and percent. Figure 3 D: Each participant is represented by two bars showing their mean number of steps per day.

4. Discussion

Findings of this study indicate that it is feasible to increase the variation in use of transport among workers in home care. From baseline to tryout, “passive” transport decreased from 73.1 % to 59.3 %, whereas “active” transport increased from 26.9 % during baseline to 40.7 % in tryout. The IQR in the category “Stand” was more than halved, whereas the IQR in the category “Sit” decreased by 19.1 %. This indicates that the distribution of time spent in the categories “Sit”, and “Stand” became more even for some of the workers from baseline to tryout. However, the IQR increased slightly in the category “Active” by 9.6 %, and in the category “Steps per day” it increased by 12.5 %, indicating that these categories were not influenced in line with the goal of the intervention. On average, 63.6 % of the participants were closer to the median in the categories “Sit”, “Stand”, “Active” and “Steps per day” in tryout compared to baseline. “Active” was the category in which most participants (81.8 %) were closer to the median from baseline to tryout.

Even though there was an increase in variation in means of transport within the group of participants from baseline to tryout, the distribution in means of transport between the participants became only somewhat more even. In tryout, 36.4 % had variation in means of transport, which was an increase from 18.2 % in baseline (Figure 2). Three participants had only “active” transport, and four participants had only “passive” transport in tryout. As only 36.4 % of the participants completed the intervention as it was intended, with variation in means of transport, there is uncertainty concerning how much the intervention affected the distribution of time spent in the categories “Sit”, “Stand”, “Active” and steps in “Steps per day” among the participants.

The implementation of the intervention relied on the coordinators delegating worklists with “passive” or “active” transport to the participants. The mean score of the tool increased from 78.2 % during baseline, to 92.3 % during tryout, indicating that workers were more in line with the parameters set for the tool during tryout. However, 63.6 % of the participants did not have variation in means of transport during tryout. This could partly be explained by the few numbers of valid workdays, there was not much room for variation. However, one can also speculate that the participants continued to choose or were assigned to the same means of transport that they were accustomed to. This again raises a question as to why these participants were not assigned to different means of transport, as was the intention of the intervention. This could be due to the parameters of the tool, which was designed with the intention of each participant having three to five valid workdays. It could also be due to the different qualifications and responsibilities of the participants in which the coordinators make sure is applied as needed. Also, one of the participants did not have a driver’s license. This implied that the participant could not drive a car, however, could still be assigned “passive” transport by being assigned to use an electrical scooter. There was also one participant who was assigned to “active” transport who chose not to comply and used their own private car instead of “active” transport.

4.1 Comparison with previous research

To the author´s knowledge, this is the first study to develop and test an intervention according to the Goldilocks Work Principle in home care. In the current study, variation in “passive” and “active” transport among the participants increased, and the distribution of physical exposures of the participants were somewhat more in line with the goals of the intervention in tryout compared to baseline. Two studies have recently been conducted to test the feasibility of interventions developed according to the Goldilocks Principle, one among childcare workers (34), and one among industry workers (33). In these studies, work tasks were modified aiming to change physical behavior and intensity of PA towards a “just right” distribution to improve fitness and health (33, 34). Among childcare workers, this was done by altering children’s games to include more high intensity PA (34). Whereas the industry workers alternated between different work tasks that had been modified to include an equal proportion of time spent sitting, standing, being physically active as well as increase time spent in high intensity PA (33). Participants in the study among the industry workers reported less fatigue, less pain and had higher levels of energy after the intervention workdays compared to baseline (33). Objectives regarding bodily pain, and self-perceived health were only assessed at baseline in the current study. However, in contrast to the study of Lerche et al. (2021), this study did not include an aim to improve fitness and health. Findings from both studies by Lerche et al. (2020 and 2021) indicate that it is feasible to implement changes to work tasks according to the Goldilocks work principle in these respective workplaces. However, the theory has not yet been tested on a large scale (33, 34).

In the current study, baseline and tryout combined, mean time participants spent sitting was 47 %, standing 29.4 %, active 23.6 %, and mean number of steps per day was 6084 steps. These findings are in line with a study recently conducted which objectively assessed physical exposures in home care workers using accelerometers and ECG measuring devices (43). The study of Tjøsvoll et al. (submitted 2022) also found that workloads among the workers in home care were quite unevenly distributed, as was the case of the current study. Findings of the present study indicate that individual differences in distribution of time spent sitting, standing and active as well as number of steps per day remained from baseline to tryout, this was especially prominent in the categories “Sit” and “Stand”.

Work in home care is sparsely researched, which could be due to a perception that this sector is difficult to study, one of the reasons being that home care workers are spread out geographically (30). As the current study applied accelerometers that recorded the physical exposures of the participants, geographic location was not as much of an issue. The exception in this case was participants who spent their workdays in the office and did not use any means of transport. Another study preformed in the home care sector found that new work programs and organizational changes occurring simultaneously as an intervention could mitigate positive effects of an intervention due to contextual instability (10). A new documentation platform (Helseplattformen) was implemented in the home care facilities in the municipality of Trondheim in May 2022. Preparations towards the implementation of the new documentation system was ongoing during the GoldiCare intervention, however, this study did not investigate whether this influenced the implementation of the intervention. The study of Andersen and Westgaard (2013) also found that interventions implemented in home care were not followed up due to lack of time or due to lack of resources. The covid 19 pandemic might have led to an increase in sick leave as well as organizational rearrangements due to a lack of recourses, which could have had an impact on the implementation of the intervention in the current study. However, this was not investigated.

Physical activity-based interventions often prescribe exercise programs involving aerobic fitness training and/or strength training (46, 47). These types of interventions can cause lost time from productive work. Also, if OPA is not modified the workers will still be exposed to the same PA demands at work that might be the main cause of their health impairments (32). The idea of the Goldilocks Work Principle is to modify work tasks that include PA without compromising productivity (32). The present study designed the intervention in such a manner that it would be a part of productive work, however, effects on productivity or eventual cost benefits were not assessed, as was the case in the studies of Lerche et al. (2020 and 2021). It has been suggested that PA preformed “on site”, integrated into the working day has the potential to reach all workers (32, 47). This approach would address the most reported barrier to engaging in PA, namely lack of time (47).

4.2 Practical implications

Results from the current study cautiously suggests that it is feasible to distribute OPA more evenly among workers by applying an intervention designed for the participants to alternate between means of transport. This also suggests that it is feasible to implement modifications to OPA in home care that can change workers physical behavior according to the Goldilocks Work Principle. However, due to the low number of participants, it is difficult to draw firm conclusions from the results. The challenges encountered in the current study underlines the need for future projects to develop more effective interventions as well as implementing them successfully to achieve the intended changes to a greater extent (33). Perhaps a large scale randomized controlled trial would be better suited to examine the effects of an intervention designed according to the Goldilocks Work Principle among workers in home care. Evaluation of the challenges and limitations of this study could provide important knowledge and insight on experiences on implementing interventions in home care for future studies.

4.3 Strengths and limitations

A strength of this study was the participatory approach used in the process of developing and implementing the GoldiCare intervention. Home care workers as well as the administrative staff were involved in designing and implementing the intervention, which has been a recommended approach in previous studies (30, 32-34). Another strength of this study was the use of accelerometers to objectively measure physical exposures presenting data on complete workdays which gave insight to the OPA performed among home care workers.

Several limitations should be noted when interpreting the results of this study. Out of 39 eligible participants, only 28.2 % of the workers completed the data collection. This may have been an effect of the demand for the participants to wear one sensor on their thigh for a total of 14 days in two measurement periods. Workers in this facility who participated in a study (43) recently were familiar with wearing sensors on their body. It is unknown whether this had an impact on the recruitment of participants of the current study.

The dataset contained outliers which was accounted for in the analysis, however, in addition to the low sample size, it impeded the possibility of inferential statistics. These factors as well as the low number of participants completing the intervention with variation in means of transport, made it difficult to draw firm conclusions in the analysis of the results.

Some of the challenges encountered in the implementation of the GoldiCare intervention were shiftwork, and that workers had different qualifications that needed to be applied correctly to meet the needs of the patients. There was an unexpected high number of workdays identified as "office days" which led to the exclusion of 1 participant as well as 4 days and 14 hours of accelerometer data. The effects of these events could have been mitigated by a greater sample size which could have allowed for some missing data due to lack of valid workdays (48). To increase the sample size, a larger number of home care facilities could have been invited to participate in the study. Considering the low number of participants and the voluntary recruitment process, the possibility of selection bias cannot be excluded. It is plausible that only the most motivated home care workers participated, and that workers not willing to participate had different demographics. In the current study, the participants served as their own controls. Future studies could implement interventions through randomized controlled trials to reduce selection bias.

Variation in means of transport was tied to the number of valid workdays per participant. The low number of valid dayshifts could have led to misleading positive results of the tool as the demand for variation in transport was set to increase when having three to five valid workdays. Even though participants were asked how many dayshifts they had during the weeks of data collection, half of the participants ended up with only one-two valid dayshifts in baseline and tryout. Increasing the data collection period in baseline and tryout from one to two weeks could have ensured a larger number of valid workdays, however, this might have prevented some workers from volunteering to participate.

The design of the GoldiCare intervention requires home care facilities to have a fairly equal distribution of worklists meant for driving a car and worklists meant for walking or biking. Therefore, the intervention would not be applicable to all home care facilities in Norway, as there are large differences in logistics depending on the geographical location of the home care facility. In rural areas all workers need to drive cars, whereas in urban areas many workers walk or bike.

The standardized workday might have been a cause for bias considering it in some cases was only based on the first four hours of the workday. Work tasks and workload is usually more demanding during the first four hours of a work shift, and administrative, non-patient contact tasks are often preformed during the last working hours of a dayshift. Therefore, standardizing the workday by removing time spent doing "office work" after the lunch break might have created a distorted presentation of the physical exposures.

A self-reported diary was applied to collect information on means of transport used at work, thus, the results depended on the compliance of the participants to report this information, and to report it correctly. Also, accelerometer data was gathered 24 hours/daily for up to seven consecutive days for each participant in both baseline and tryout, of which only data on time spent at work was analyzed. Future studies should consider the individual workers entire 24/7/52 physical activity when designing work according to the Goldilocks Work Principle (31, 32).

5. Conclusion

Results from the current study cautiously suggests that it is feasible to distribute OPA more evenly among workers in home care by applying an intervention designed for participants to alternate between means of transport. This also suggests that it is feasible to implement modifications to OPA in home care that can change workers physical behavior according to the Goldilocks Work Principle. However, considering the small sample size, as well as the low number of participants completing the intervention with variation in means of transport, there is uncertainty concerning how much the intervention affected the distribution of OPA. Variation in means of transport increased, however, the distribution in means of transport between the participants only slightly increased. The distribution of time spent in the categories "Sit", and "Stand" became somewhat more even from baseline to tryout. However, the distribution of time spent "Active" and steps in "Steps per day" increased slightly. Overall, more participants moved towards the goal which was reaching closer to the median from baseline to tryout. This feasibility study provides useful knowledge for further development of the "just right" distribution of OPA in home care. Though some of the findings cautiously indicate that a more even distribution of OPA was achieved objectively during tryout, a qualitative approach to investigate the participants subjective experience could perhaps answer more questions. Future studies could investigate the feasibility of interventions focused on how OPA concerned with direct patient contact can be facilitated in order to approach the "just right" balance between load and recovery at work in home care.

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Appendix A: Study approval from the Regional Committee for Medical and Health Research Ethics in Norway (project ID 64541).

Søknadsnummer 64541

Søknadsid 64541

Tittel
Gullhår-prinsippet: Kan arbeidsdagen i hjemmetjenesten organiseres slik at den blir mer helsefremmende for ansatte?

Vitenskapelig tittel
The Goldilocks principle: Can work be organized to become more health promoting for employees in home care services?

Prosjektleder [redacted]

Koordinerende forskningsansvarlig institusjon Norges teknisk-naturvitenskapelige universitet

Forskningsansvarlig institusjon

Samarbeidene institusjoner

Formål
«Gullhår-prinsippet» handler om å tilrettelegge og tilpasse vesentlige arbeidsoppgaver (kjerneoppgaver) i arbeidshverdagen slik at den har en sunn balanse mellom fysiske belastninger (f. eks. stå, gå, bøye seg og løfte) og hvile (stillesitting), uten at produktiviteten blir redusert. I dette prosjektet vil vi utvikle en intervensjon (med utgangspunkt i kartlegging av ansattes arbeidshverdag ved å gjennomføre deltagende observasjon og objektivt måling av fysisk aktivitet og kondisjon) basert på Gullhår-prinsippet som kan føre til at arbeidsdagen til ansatte i hjemmetjenesten i Trondheim kommune gir; (a) en helsefremmende balanse mellom fysisk belastning og hvile, og (b) aktivitetsmønster som gir bedre helse (c) uten at det går på kompromiss med utførelsen av kjernearbeidsoppgavene og produktiviteten. Intervensjonen vil deretter bli utprøvd i en feasibility study (ved 3 enheter). Økt kunnskap om hvordan arbeidshverdagen til ansatte i hjemmetjenesten kan bli mer helsefremmende.

Prosjekttype
Annen ikke-klinisk intervensjonsstudie (deltakerne er ikke pasienter), Helseøkonomisk studie, Observasjonsstudie

Type studie

Status (arbeidsflyt)	Godkjent med vilkår
Startdato	05.11.2019
Sluttdato	05.12.2024
Biologisk materiale	Nei

Prosjektspesifikk biobank

Finansiering	Norges teknisk-naturvitenskaplige universitet
Behandlende organisasjon	REK midt

Appendix B: Activity diary

The activity diary handed out to all the participants to fill out both during baseline and tryout.

Aktivitetsdagbok for døgnmåling

Prosjekt ID: (fylles ut av prosjektarb.)	**Pre** ☐ **Post** ☐ (fylles ut av prosjektarb.)

Vennligst registrer tidspunktet (f.eks 11:25) når du står opp, Referansehopp, oppmøtettid på jobb, arbeidsoppgaver i løpet av dagen, slutt på arbeidsdag og når du legger deg. Før også opp perioder der måler er tatt av kroppen.

Dato	Aktivitet	Tidspunkt (start)	Kommentarer (For eksempel syk, fri fra jobb)
Dag 1 ___ / ___	Målere påsatt		
	Referansehopp like etter du står opp		
	Arbeidsdag slutt		
	I seng, legger meg til å sove		
Dag 2 ___ / ___	Står opp		
	Referansehopp like etter du står opp		
	Oppmøtetid på jobb		
	Arbeidsdag slutt		
	I seng, legger meg til å sove		
Dag 3 ___ / ___	Står opp		
	Referansehopp like etter du står opp		
	Oppmøtetid på jobb		
	Arbeidsdag slutt		
	Målere tatt av		
Dag 4 ___ / ___	Står opp		
	Referansehopp like etter du står opp		
	Oppmøtetid på jobb		
	Arbeidsdag slutt		

	I seng, legger meg til å sove		
Dag 5 ___ / ___	Står opp		
	Referansehopp like etter du står opp		
	Oppmøtetid på jobb		
	Arbeidsdag slutt		
	Målere tatt av		
Dag 6 ___ / ___	Står opp		
	Referansehopp like etter du står opp		
	Oppmøtetid på jobb		
	Arbeidsdag slutt		
	I seng, legger meg til å sove		
Dag 7 ___ / ___	Står opp		
	Referansehopp like etter du står opp		
	Oppmøtetid på jobb		
	Arbeidsdag slutt		
	Målere tatt av		

Øvrige kommentarer kan noteres her:

Man kan for eksempel føre opp perioder der sensor er tatt av

PhD-kandidat ... kan kontaktes ved spørsmål på telefonnummer ...

Appendix C: Questionnaire
The questionnaire filled out by the participants.

Spørreskjema

Utprøving av organisatoriske tiltak for helsefremming for ansatte i hjemmetjenesten

Du er invitert til å delta i forskningsprosjektet «Utprøving av organisatoriske tiltak for helsefremming for ansatte i hjemmetjenesten». Dette spørreskjemaet er en viktig del av prosjektet og vi ber deg derfor om å vennligst svare på skjemaet så nøyaktig som mulig. Vi ber deg levere inn skjemaet i papirform sammen med samtykkeskjema når du møter til øvrig datainnsamling (montering av aktivitetsmålere og mål av høyde og vekt), ved din enhet.

I spørreskjemaet finner du arbeid- og helserelaterte spørsmål. Dersom enkelte spørsmål er uklare, kan du la dem stå åpne og drøfte dem med datainnsamlingspersonale når du møter opp til datainnsamling. Enkelte steder spør vi om antall ganger eller lengde på en periode. Dette kan være vanskelig å huske helt eksakt, så skriv det tallet du tror er mest riktig.
Hver deltaker er like viktig. Jo flere som blir med, jo mer helhetlig og verdifull informasjon får vi. I vedlagt samtykkeskjema finner du utfyllende informasjon om prosjektet.

Takk for at du deltar.

Prosjekt ID____________ (fylles ut av prosjektmedarbeider)

1. Kjønn_____________ **2. Alder**____________

3. Sivilstand *(Sett kryss)*

Ugift ______
Gift ______
Enke, enkemann ______
Skilt ______
Separert ______
Registrert partner ______
Separert partner ______
Skilt partner ______
Gjenlevende partner ______

4. Bor du sammen med noen? *(Sett kryss)*

Nei, jeg bor alene ______
Ja, ektefelle/samboer/partner ______
Ja, andre personer 18 år eller eldre ______
Hvis ja, hvor mange andre over 18 år? ______ *(Skriv antall)*
Ja, barn under 18 år ______
Hvis ja, hvor mange barn under 18 år? ______ *(Skriv antall)*

5. Hvor stor prosentvis stillingsandel har du? _______________% *(min. 1, maks. 100)*

6. Er hjemmetjenesten din hovedarbeidsgiver? *(Sett kryss)*

Ja______ Nei______

7. Hvormange år har du arbeidet i hjemmetjenesten? ____________ *(Antall år*

HELSE OG DAGLIGLIV

Hvordan er helsa di nå?

Dårlig	Ikke helt god	God	Svært god
☐	☐	☐	☐

Hvor sterke kroppslige smerter har du hatt i løpet av de siste 4 uker?

Ingen	Meget svake	Svake	Moderate	Sterke	Meget sterke
☐	☐	☐	☐	☐	☐

UTDANNING

Hvilken utdanning er den høyeste du har fullført?
(Sett ett kryss)
Med grunnskole menes barne- og ungdomsskole, framhaldsskole, folkehøyskole.
Med 1-2 årig videregående menes realskole, middelskole, yrkesskole.

- Grunnskole ☐
- 1-2 årig videregående skole ☐
- 3 år i videregående skole ☐
- Fagbrev eller svennebrev ☐
- Høyskole/universitet, mindre enn 4 år ☐
- Høyskole/universitet, 4 år eller mer ☐

MUSKLER OG LEDD

Har du vært plaget med smerter i muskler og ledd sammenhengende i minst 3 måneder i løpet av det siste året?

Nei ☐ Ja ☐

TOBAKK

Røykevaner *(Sett ett kryss)*

- ☐ Jeg har aldri røykt
- ☐ Jeg har røykt AV OG TIL tidligere
- ☐ Jeg røyker AV OG TIL nå (ikke daglig)
- ☐ Jeg røyker DAGLIG nå:
  - Jeg røyker omtrent .... ☐ sigaretter per dag
  - Jeg begynte å røyke daglig da jeg var .... ☐ år gammel
- ☐ Jeg har røykt DAGLIG tidligere;
  - Jeg begynte da jeg var.......... ☐ år gammel
  - Jeg sluttet da jeg var............ ☐ år gammel
  - Da jeg røykte, røykte jeg....... ☐ sigaretter per dag

ARBEIDSEVNE

Hvordan er din nåværende arbeidsevne i sammenligning med når den var på sitt beste?

Vi går ut ifra din arbeidsevne på sitt beste verdsettes med **10** poeng. Sett kryss under det tallet som best beskriver din nåværende arbeidsevne. **0** betyr at du ikke er i stand til å arbeide for øyeblikket.

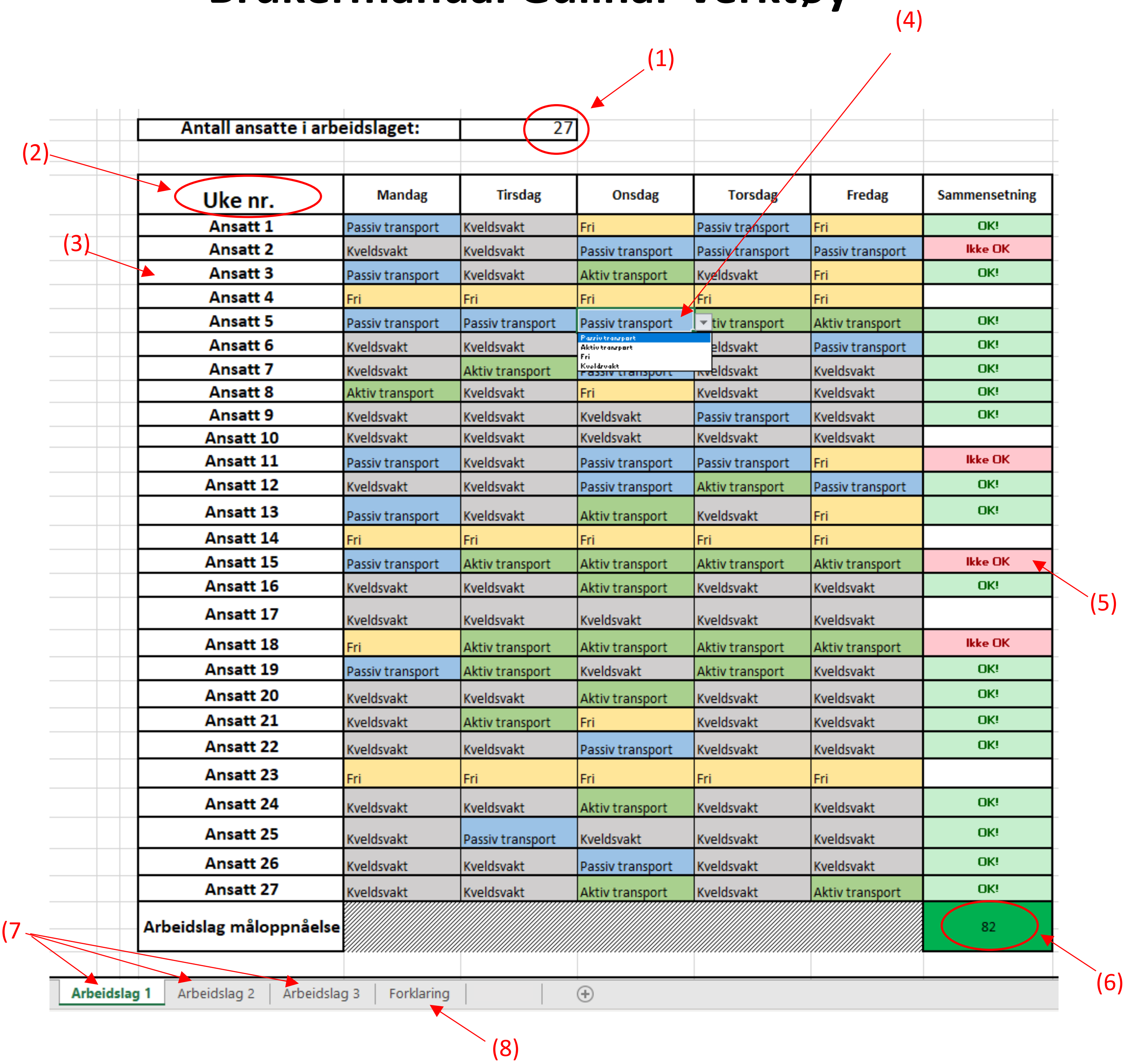
Helt uten evne til å arbeide — Arbeidsevne på sitt beste

0	1	2	3	4	5	6	7	8	9	10

Appendix D: User manual for the excel tool

The manual on how to use the tool that was e-mailed to the coordinators.

Brukermanual Gullhår-verktøy



Antall ansatte i arbeidslaget:	27					
Uke nr.	**Mandag**	**Tirsdag**	**Onsdag**	**Torsdag**	**Fredag**	**Sammensetning**
Ansatt 1	Passiv transport	Kveldsvakt	Fri	Passiv transport	Fri	OK!
Ansatt 2	Kveldsvakt	Kveldsvakt	Passiv transport	Passiv transport	Passiv transport	Ikke OK
Ansatt 3	Passiv transport	Kveldsvakt	Aktiv transport	Kveldsvakt	Fri	OK!
Ansatt 4	Fri	Fri	Fri	Fri	Fri	
Ansatt 5	Passiv transport	Passiv transport	Passiv transport	Aktiv transport	Aktiv transport	OK!
Ansatt 6	Kveldsvakt	Kveldsvakt		Kveldsvakt	Passiv transport	OK!
Ansatt 7	Kveldsvakt	Aktiv transport	Passiv transport	Kveldsvakt	Kveldsvakt	OK!
Ansatt 8	Aktiv transport	Kveldsvakt	Fri	Kveldsvakt	Kveldsvakt	OK!
Ansatt 9	Kveldsvakt	Kveldsvakt	Kveldsvakt	Passiv transport	Kveldsvakt	OK!
Ansatt 10	Kveldsvakt	Kveldsvakt	Kveldsvakt	Kveldsvakt	Kveldsvakt	
Ansatt 11	Passiv transport	Kveldsvakt	Passiv transport	Passiv transport	Fri	Ikke OK
Ansatt 12	Kveldsvakt	Kveldsvakt	Passiv transport	Aktiv transport	Passiv transport	OK!
Ansatt 13	Passiv transport	Kveldsvakt	Aktiv transport	Kveldsvakt	Fri	OK!
Ansatt 14	Fri	Fri	Fri	Fri	Fri	
Ansatt 15	Passiv transport	Aktiv transport	Aktiv transport	Aktiv transport	Aktiv transport	Ikke OK
Ansatt 16	Kveldsvakt	Kveldsvakt	Aktiv transport	Kveldsvakt	Kveldsvakt	OK!
Ansatt 17	Kveldsvakt	Kveldsvakt	Kveldsvakt	Kveldsvakt	Kveldsvakt	
Ansatt 18	Fri	Aktiv transport	Aktiv transport	Aktiv transport	Aktiv transport	Ikke OK
Ansatt 19	Passiv transport	Aktiv transport	Kveldsvakt	Aktiv transport	Kveldsvakt	OK!
Ansatt 20	Kveldsvakt	Kveldsvakt	Aktiv transport	Kveldsvakt	Kveldsvakt	OK!
Ansatt 21	Kveldsvakt	Aktiv transport	Fri	Kveldsvakt	Kveldsvakt	OK!
Ansatt 22	Kveldsvakt	Kveldsvakt	Passiv transport	Kveldsvakt	Kveldsvakt	OK!
Ansatt 23	Fri	Fri	Fri	Fri	Fri	
Ansatt 24	Kveldsvakt	Kveldsvakt	Aktiv transport	Kveldsvakt	Kveldsvakt	OK!
Ansatt 25	Kveldsvakt	Passiv transport	Kveldsvakt	Kveldsvakt	Kveldsvakt	OK!
Ansatt 26	Kveldsvakt	Kveldsvakt	Passiv transport	Kveldsvakt	Kveldsvakt	OK!
Ansatt 27	Kveldsvakt	Kveldsvakt	Aktiv transport	Kveldsvakt	Aktiv transport	OK!
Arbeidslag måloppnåelse						82

(1) Fyll inn totalt antall ansatte i det aktuelle arbeidslaget. Dette er viktig for at utregningene i verktøyet skal bli korrekte.
(2) Fyll inn uke nummer. Excel verktøyet inneholder skjema for tre uker. Fyll ut en for hver uke. Ikke slett informasjon fra skjemaet når den aktuelle uken er over.
(3) Fyll inn navn på ansatte. En ansatt per rad.

(4) Hvert felt har en rullgardinfunksjon hvor du kan velge mellom alternativene «passiv transport», «aktiv transport», «fri» og «kveldsvakt». Valgene «fri» og «kveldsvakt» blir ikke inkludert i sammensetningsmålet.

Passiv transport = bil, elsparkesykkel
Aktiv transport = elsykkel, gå

(5) Sammensetning indikerer om den aktuelle ansatte har en god balanse mellom aktiv og passiv transport på dagvakt den aktuelle uken:

- «OK!» indikerer at sammensetningen er god.
- «Ikke OK» indikerer enten for mange aktive eller for mange passive vakter gjennom uken.
- Tomt felt kommer opp dersom den ansatte ikke er registrert med dagvakter den aktuelle uken.

(6) Arbeidslag måloppnåelse indikerer en samlet vurdering for arbeidslaget: dårlig (rød), medium (gul) og god (grønn) måloppnåelse.
(7) Gjennomfør (1) til (4) for alle tre arbeidslagene. Du finner de ulike arbeidslagene i den horisontale verktøylinjen nederst i verktøyet
(8) Forklaringsarket gir en grundigere innføring i hva som ligger «bak» verktøyet. Dette arket er låst og dere vil derfor ikke kunne gjøre endringer her.
Når alle tre ukene er gjennomført, leveres skjema til...– dette avtales nærmere.

Appendix E: Parameters set for the excel-tool

Explanation of the parameters set for the excel-tool that was developed to help the coordinators implement the intervention.

Forklaring

Informasjon om skjemaet	Fargekode arbeidslister	Måloppnåelsekode arbeidslag	Måloppnåelse individuell		Regler	
	Passiv transport = bil, elsparkesykkel	Lav = 0-49%	1 dagvakt =	Maks 1 aktiv	Sammensetning	Antall aktiv og passiv
			2 dagvakter =	Maks 2 aktiv	Fri	Teller ikke i total måloppnåelse
	Aktiv transport = elsykkel, gå	Middels = 50-79%	3 dagvakter =	Minst 1 aktiv	Kveldsvakt	Teller ikke i total måloppnåelse
				Maks 3 aktive		
	Fri = ikke på jobb	Høy = 80-100%	Fire dagvakter =	Minst 1 aktiv		
				Maks 3 aktive		
			Fem dagvakter =	Minst 2 aktive		
				Maks 3 aktive		

NTNU

Kunnskap for en bedre verden