Long-term physical activity on prescription intervention for patients with insufficient physical activity level—a randomized controlled trial

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Long-term (2-year) physical activity prescription (PAP) treatment is feasible in outpatient, primary care settings, and engaged patients can increase their moderate-intensity physical activity with the help of treatment from both physical activity specialists and primary care providers.

Background Facts:

1. Lack of physical activity (PA) is a major risk factor for chronic disease and mortality, and regular PA has been found to be beneficial in prevention and treatment of chronic disease
2. Changing lifestyle habits by regularly incorporating PA can require motivation and support; thus, research on the most effective implementation models is of interest
3. Sweden utilizes a physical activity on prescription (PAP) method that includes the following 3 elements: patient-centered dialogues; individually-tailored PA recommendations with written prescriptions; and individualized, structured follow-up
4. A previous systematic review shows that PAP in healthcare settings may increase PA levels in inactive patients

Key Takeaways:
While it may be preferable from the perspective of cohesive, interdisciplinary team-based care to involve a physiotherapist (PT) in patient treatment with PA, the benefit may be equal to that from treatment by a primary care provider (PCP) alone. Results from this study suggest that patients treated by their PCP still increased their PA levels with no significant differences from patients with an additional PT component. Incorporating PAP treatment into primary care, when possible, can support patients in PA health behavior change and may be worthwhile for providers to incorporate.

Ongoing support appears to be important for patients to increase and maintain PA.

Hypothesis /Objectives:
To examine long-term (2-year) effects of and explore differences in effectiveness when comparing two PAP interventions delivered in a primary care context – one delivered by the healthcare center (HCC) vs. an enhanced intervention delivered by a physiotherapist (PT).

The authors hypothesized that ≥ 150 min of moderate-intensity PA/week would be achieved by 40% in the PT group and 20% in the HCC group.

Study Design:

A 2-year randomized controlled trial (RCT) of PAP treatment of an insufficiently physically active population, with N=190 patients randomized to two arms: (1) heath care center (HCC) group and (2) physiotherapy (PT) group

- HCC group (n=92): Treatment provided in a primary care setting by nurses trained in the health effects of PA and the PAP method; treatment included "an individualized dialogue about PA, an individually dosed PA recommendation, including a written prescription, and an individual-adjusted follow-up"
- PT group (n=98): Physiotherapists provided PAP treatment in a primary care setting; treatment included "an individualized dialogue about PA, an individually dosed PA recommendation, including a written prescription" (same as HCC group), but differed in that follow-up was at fixed time points (6 times during year 1, 3 times during year 2); additionally received an aerobic physical fitness test on an ergometric bike (measures collected at 4 timepoints)

Statistical Methods

- Descriptive statistics to describe baseline characteristics of total sample, PT group, and HCC group
- Intention-to-treat analysis; linear mixed-effects models used to analyze longitudinal changes across baseline, 1, and 2 years

Study Population:

- Participants were from an ongoing study (n=444) and had previously undergone PAP treatment for six

months at one of 15 designated health care centers in Gothenburg, Sweden

- Patients were insufficiently physically active and had not reached the internationally recommended minimum PA level of 150 min/week in the previous phase of this study
- Ages 27–77 years with metabolic risk factors

Outcome Measures:

- PA level, metabolic health, and health-related quality of life (HRQOL) were assessed in both groups at baseline, 1 year, and 2 years. All measurements were performed by the nurses at the HCC
- PA assessed via two questionnaires: (1) self-assessment of intensity level (moderate or more vigorous) according to the American College of Sports Medicine and the American Heart Association recommendations, and (2) the International Physical Activity Questionnaire (IPAQ), to record duration and frequency of three types of PA performed–walking, moderate-intensity activities, and vigorous-intensity activities—for which results estimate energy expenditure (MET- minutes/week)
- Anthropometric and metabolic measurements: BMI, blood pressure, blood plasma glucose, triglycerides, cholesterol, HDL, LDL
- Health-related quality of life measured by the Swedish health-related quality of life (HRQOL) Short Form 36; a physical component summary score (PCS) and mental component summary score (MCS) were generated

Summary of Findings:

- HCC group: n= 92 randomized patients, 77 (84%) analyzed at 1-year follow-up, 67 (73%) analyzed at 2-year follow-up
- PT group: n=98 patients randomized, 83 (85%) analyzed at 1-year follow-up, 76 (78%) analyzed at 2 year follow-up
- Average baseline PA was low in both groups (described as a brisk walk for 30 min, 2-3 times per week or less)
- Both HCC and PT groups significantly increased PA levels compared to baseline; at 2-year follow-up, 31.4% of PT group and 38.5% of HCC group met public health recommendation for moderate intensity PA/week
- No significant differences in PA level or MET scores (a measure of PA) between the PT and HCC groups at the 2-year follow-up
- At 2-year follow up, both groups displayed improved HDL ($p = 0.004$), mental health status ($p = 0.036$), and BMI ($p = 0.001$), with no difference between them
- No significant longitudinal changes in other measures (waist circumference, blood pressure, fasting glucose, triglycerides, total cholesterol, LDL, PCS) were observed
- No between-group or within-group changes in reported medication group were observed at 1 or 2 year follow-up

Conclusions:

- In this 2-year intervention, some health and quality of life metrics improved with the use of PAP (both PT and HCC groups) in patients with insufficient PA at baseline
- No significant differences were observed between PT and HCC arms, suggesting that while it may be preferable to incorporate treatment with a physiotherapist when possible, patients still benefit from PA treatment given by their PCP
- PAP is feasible in primary care settings, and future studies should aim to further explore how best to administer long-term PAP treatment

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