OneStep

WHITE PAPER · PATIENT ENGAGEMENT

Providing Patients with Motion Feedback Improves Adherence to Exercise Programs

Progress reports built on objective gait data reverse the decline in home exercise adherence, and do so more than a session with the therapist

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Providing Patients with Motion Feedback Improves Adherence to Exercise Programs

Progress reports built on objective gait data reverse the decline in home exercise adherence, and do so more than a session with the therapist

OneStep Research Team
OneStep · Correspondence: info@onestep.co

ABSTRACT

Background. A major challenge in physical therapy is patient adherence to home exercise programs, the exercises patients perform independently between sessions. Adherence and consistency lead to better clinical outcomes, yet adherence typically falls over time.

Objective. To determine whether OneStep's digital health platform, and in particular its progress reports showing a patient's gait parameters over time, increases adherence to the prescribed home exercise program.

Methods. Retrospective analysis of 236 patients in OneStep's remote physical therapy program who actively performed their assigned course for at least two months. Exercise tasks performed per week were counted over the first nine weeks. All three-week windows were normalized to the first week, and windows in which a progress report was sent (31 patients received at least one) or a PT meeting occurred (164 patients) in the middle week were compared with windows containing neither.

Results. Tasks per week fell from 53.9 in week one to 25.6 in week nine. Without a progress report, patients performed 3.2 fewer tasks in the second week of a window and 5.7 fewer in the third. When a progress report arrived in the middle week, tasks rose by 7.8 that week and remained 3.8 above the first week in the following week. A PT meeting in the middle week held adherence roughly flat (−0.2 then −1.5). Results were unchanged when restricted to patients who received at least one report.

Conclusions. Conveying progress through shared objective measurements is a major motivating factor, driving engagement and adherence to the plan of care, with a larger effect than meeting the therapist.

KEY POINTS

Question	Does showing patients objective feedback on their gait increase adherence to their home exercise program?
Findings	In 236 patients, adherence normally declined week over week (−3.2 tasks). In the week a progress report was received, patients completed 7.8 more tasks than the week before, and the gain partly persisted the following week; a PT meeting only held adherence flat.
Meaning	Tangible, objective evidence of progress motivates patients more than contact alone, making progress reports a practical lever for engagement in remote and hybrid care.

KEYWORDS adherence · home exercise program · patient engagement · progress report · motion feedback · physical therapy · remote care

1 Introduction

Although patients are prescribed exercises to complete independently in addition to those performed in therapeutic sessions, many do not adhere completely to their home exercise programs.[1] Lack of engagement matters because adherence and consistency lead to better clinical outcomes.[2]

One avenue to increase adherence is technology that strengthens the therapeutic alliance through enhanced patient-clinician communication and the ability to capture progress throughout the plan of care. Such feedback keeps patients engaged and invested in their progress and motivates them to continue.

OneStep's FDA-listed digital health app serves as a gait and motion analysis tool, a platform for patient-PT communication and a platform for patients to access and perform at-home exercises. It is therefore uniquely placed to increase adherence. Using data from OneStep's patient database, we investigated whether it does.

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2 Methods

2.1 Patient cohort

A total of 236 patients from OneStep's database were included. All had undergone the OneStep program, in which a PT is assigned to each patient, meets with them remotely and assigns customized exercise courses accessible within the app; courses consist of daily exercises tailored to the patient's condition and the PT's clinical judgement. Inclusion required actively performing the assigned course for two months, defined as a last recorded exercise at least two months after the first (Table 1).

Group	Total	Male	Female	N.D.	Mean age (SD)	Range	<35	35–60	60+	N.D.
Complete cohort	236	119 (77%)	36 (23%)	81	56.6 (15.4)	22–87	13	55	56	112
With progress reports	31	17 (71%)	7 (29%)	7	58.0 (14.6)	30–77	3	11	11	6
With meetings	164	79 (77%)	23 (23%)	62	57.9 (15.1)	22–87	8	31	37	88

Table 1. Cohort statistics. N.D. = no data.

2.2 Progress reports and meetings

Patients can receive progress reports detailing their gait parameters over time, built from walks measured with the OneStep app (Figure 4 shows an excerpt). They can also meet their assigned OneStep PT by video call. Of the 236 patients, 31 received at least one progress report and 164 had at least one PT meeting during the analysed period.

2.3 Measurement of data

All data is from OneStep's database, which stores dates and times of meetings, the times reports were sent, and the time each exercise task is performed in the app. Only the first nine weeks of each patient's data were used, because some patients reach the end of their program beyond that point.

2.4 Testing adherence changes

We considered all sets of three consecutive weeks within a patient's data and counted tasks performed in each. Counts were normalized by subtracting the first week's count, giving the change in weeks two and three relative to week one. A patient performing 34, 29 and 25 tasks in weeks four to six contributes the trio 0, −5, −9; if they then performed 19 tasks in week seven, weeks five to seven contribute 0, −4, −10. Trios with a progress report, or a meeting, in the middle week were compared with trios containing none.

3 Results

3.1 Fall in adherence over time

Patients performed fewer exercise tasks per week as time passed (Figure 1): an average of 53.9 tasks in the first week of the program, falling to 25.6 by the ninth week.

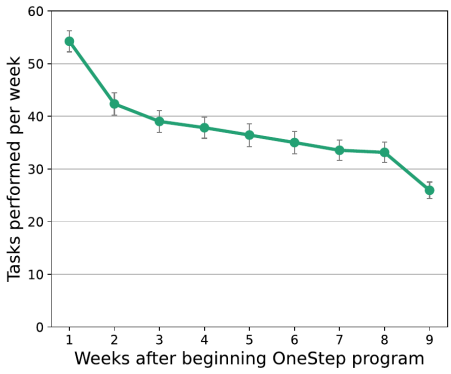


Figure 1. Exercise tasks performed in each week of the OneStep program. Error bars show standard error of the mean.

3.2 Effect of progress reports

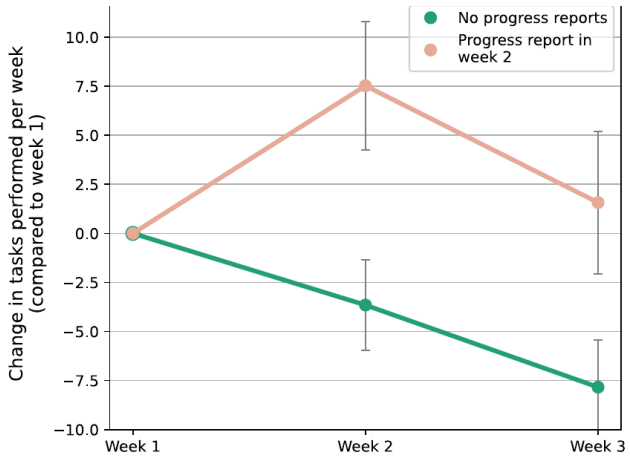
As expected, the number of tasks declined from week to week when no progress report was received: 3.2 fewer tasks in the second week than the first, and 5.7 fewer in the third. When a progress report was received in the middle week, the number of tasks increased by an average of 7.8 that week, and in the following week was still 3.8 higher than in the week preceding the report (Figure 2).

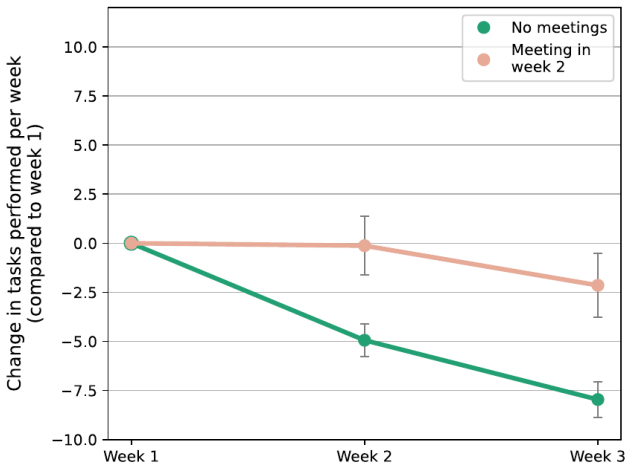
3.3 Effect of PT meetings

Meetings improved adherence relative to periods with no meetings, but the number of tasks still decreased slightly: 0.2 fewer in the week of a meeting than the previous week, and 1.5 fewer in the week after a meeting than the week before it (Figure 3).

To ensure that patients who received progress reports were not simply more adherent in general, the analyses were repeated using only patients who received at least one progress report during their program. Results were similar (Supplementary Figure 1).

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Figures 2 and 3. Effect of a progress report (left) and of a PT session (right) on adherence. Change in weekly tasks relative to the first week of each three-week window, with (orange) and without (green) the event in week 2. Error bars show standard error of the mean.

4 Discussion

Personalized communication with a PT, whether through a meeting or feedback in a progress report, helps drive engagement and offsets the decline in adherence over time. OneStep's app makes it easy for patients not only to communicate with their PT and access their customized program, but also to see the results of their efforts and observe their own progress. Greater engagement and adherence, in turn, aid the therapy journey and lead to better outcomes and quality of life.[2]

We found a much larger effect when patients received progress reports than when they simply met their PT. The report contains quantitative data about the patient's gait over time and lets them observe progress in objective form. Seeing such tangible evidence of progress appears to be highly motivating: patients may not only maintain but increase their compliance in order to see further gains on the next report.



Figure 4. Excerpt from a sample progress report. Summary of exercises, walks and gait parameters over a month, with the step rate trend. Patient identifiers removed.

5 Conclusion

Conveying progress through shared objective measurements is a major motivating factor for patients. Progress reports built on gait data drive engagement and adherence to the plan of care, with a larger effect than a therapist meeting alone.

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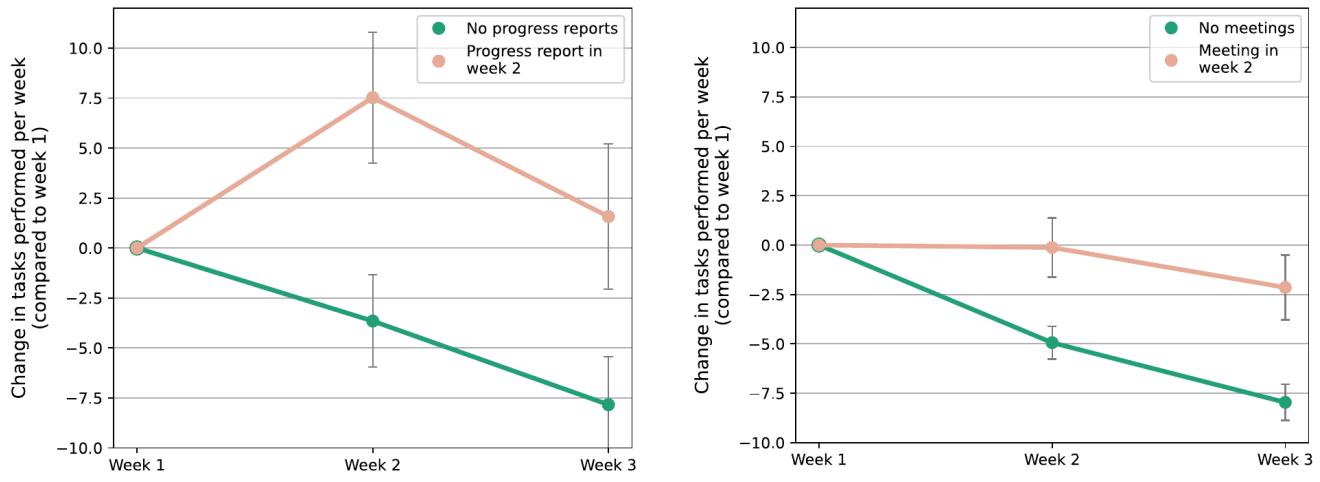
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Supplementary figure



Supplementary Figure 1. Effect of progress reports (left) and meetings (right) in the subset of patients who received at least one progress report. Error bars show standard error of the mean.

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