Efficacy of a Coaching Program to Promote Physical Activity in People with Inflammatory Arthritis

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Background

- Being physically active is key in the management of inflammatory arthritis
- Most patients do not meet physical activity guidelines

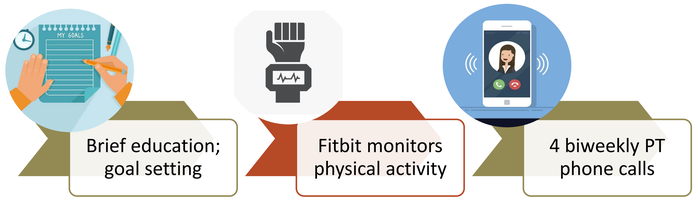
Objective

To assess efficacy of a physical activity coaching program for promoting physical activity and improving health outcomes in people with rheumatoid arthritis (RA) or systemic lupus erythematosus (SLE)

Methods

Design: Randomized controlled trial

Intervention: An 8-week Physical Activity Coaching Program



Eligibility criteria

- Had a physician-confirmed diagnosis of RA or SLE
- Had not used any physical activity wearable device
- Had no contraindication to be physically active without health professional supervision

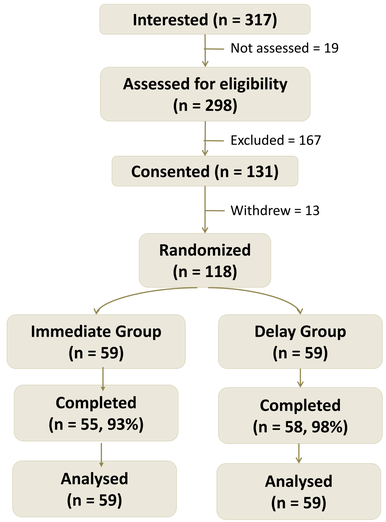
Primary Outcome Measure

- **Physical activity time (mins/day)**: Moderate-to-vigorous physical activity done in bouts ≥ 10 minutes, measured with a SenseWear device

Analysis

- ANCOVA was used to evaluate the effect of the intervention on outcomes (3 planned contrasts)
- Post-hoc subgroup analysis explored the effect of the intervention in different diagnoses

Figure 1: Study flow



Immediate Group (IG; n = 59)

- Intervention started immediately

Delay Group (DG; n = 59)

- Intervention started in Week 10

IG: 51 (86%)
DG: 54 (92%)

Age

IG: 53.5 (SD 14.7) years
DG: 53.1 (SD 12.6) years

BMI

IG: 27.1 (SD 6.5) kg/m^2
DG: 28.7 (SD 8.9) kg/m^2

Results

Table 1: Results of outcome measures

	Immediate Group (*IG*; n = 59)				Delay Group (*DG*; n = 59)				Group Effect *IG* vs *DG* Coefficient (95% CI)		
	T0 – Pre (Baseline)	T1 - Post (Wk 9)	T2 (Wk 18)	T3 (Wk 27)	T0 - Pre (Baseline)	T1 - Post (Wk 9)	T2 (Wk 18)	T3 (Wk 27)	Contrast 1	Contrast 2	Contrast 3
Activity time (≥3 METs MVPA) [mins/day (SD), SenseWear]	37.8 (39.6)	44.7 (41.3)	43.2 (48.2)	37.8 (38.8)	31.6 (42.7)	31.6 (32.4)	32.8 (36.8)	34.0 (36.1)	9.4 (-0.5, 19.3)	0.9 (-5.6, 7.5)	5.4 (-1.0, 11.8)
Daily steps (SD) [SenseWear]	5,900.8 (3,214.1)	6,673.4 (3,462.2)	6,384.4 (3,358.5)	6,070.2 (3,158.7)	5,605.7 (2,865.1)	5,819.1 (2,860.2)	6,072.8 (2,857.3)	6,115.6 (2,805.3)	644.1 (-103.8, 1,392.0)	224.1 (-143.6, 591.8)	451.9** (20.36, 883.4)
Sedentary time [mins/day (SD), SenseWear]	491.6 (192.5)	508.4 (203.5)	507.8 (195.8)	506.8 (179.7)	523.0 (194.4)	530.0 (180.2)	531.4 (165.4)	498.0 (155.6)	10.4 (-53.4, 32.6)	1.1 (-31.1, 33.4)	5.2 (-26.3, 36.7)
McGill Pain Questionnaire (0-45; lower = better)	13.3 (10.80)	10.9 (8.4)	10.0 (8.7)	10.9 (9.2)	13.9 (9.5)	14.6 (9.7)	12.6 (10.0)	10.6 (9.7)	-2.45** (-4.78, -0.13)	-2.07** (-4.02, -0.12)	-2.27** (-4.05, -0.49)
Fatigue Severity Scale (1-7; lower = better)	4.8 (1.4)	4.5 (1.3)	4.8 (1.3)	4.6 (1.4)	4.9 (1.3)	4.9 (1.3)	4.6 (1.5)	4.7 (1.3)	-0.31 (-0.63, 0.01)	-0.35** (-0.57, -0.13)	-0.33** (-0.53, -0.13)
Partners in Health (0-96; higher = better)	72.8 (11.7)	75.5 (12.5)	77.6 (11.5)	77.6 (12.8)	73.5 (11.7)	74.6 (11.2)	78.7 (10.8)	77.3 (11.0)	1.58 (-1.02, 4.18)	3.96** (1.72, 6.21)	2.70** (0.66, 4.75)

MVPA: Moderate-to-Vigorous Physical Activity; performed in bouts ≥ 10 minutes

*$p < 0.05$; **$p < 0.01$

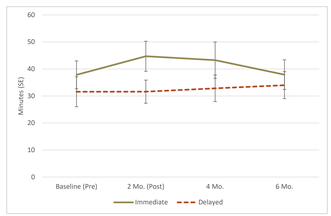
Contrast 1: Compared T0-T1 between the two groups

Contrast 2: Compared T0-T1 with T1-T2 in the Delay Group

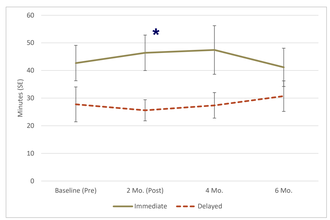
Contrast 3: Combined the first and second contrast for an overall treatment effect estimation

Figure 2: Physical activity time

All (n = 118)



Rheumatoid Arthritis (n = 83)



Systemic Lupus Erythematosus (n = 35)

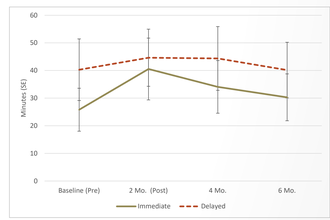
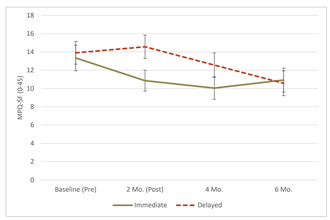


Figure 3: Pain

All (n = 118)



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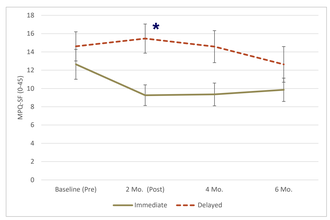
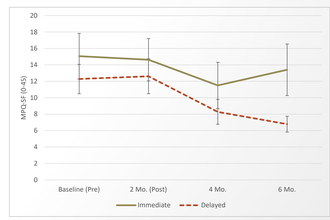


Systemic Lupus Erythematosus (n = 35)



Conclusion

- Coaching by a PT, with the use of a wearable has potential to improve physical activity behaviour in people with IA, but further study is needed to understand the intervention effect on different diagnoses.
- We found a significant improvement in pain, suggesting the intervention might have a positive effect on symptom management.

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