ABSTRACT NUMBER: 1666

Preliminary Effects of a Fully-Remote Online Physical Activity Program Following Knee Replacement

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SESSION INFORMATION

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Session Type: Abstract Session

Title: Abstracts: Orthopedics, Low Back Pain, & Rehabilitation

Session Time: 1:00PM-2:30PM

Background/Purpose: After knee replacement (KR), most adults fail to meet recommended levels of physical activity. Virtual options to promote physical activity in clinical populations have been explored; however, less is known about the promise of virtual programs for adults with KR. Therefore, this study conducted entirely remotely, examined the effects of a 12-week fully automated online physical activity program (Energize!) on ActiGraph-assessed physical activity and patient-reported outcomes in adults with KR.

Methods: Physically inactive adults (self-reporting < 60 min/week of exercise) with KR ≥1 year ago were recruited nationwide from ResearchMatch.org and were randomized to either start the Energize! program immediately or after 12 weeks (waitlist control). Energize! consists of weekly, behavioral-based video lessons and a website to plan and track weekly activity and receive automated feedback tailored to their weekly goals. Incremental moderate to vigorous intensity physical activity (MVPA) goals progressed from 75 min/week to 200 min/week. Weekly MVPA (≥2020 counts/min) and steps/day were assessed at baseline and 12 weeks with a waist-worn ActiGraph GT9x Link accelerometer for 7 days. Patient-reported outcomes including PROMIS physical function, pain interference, cognitive function, and pain intensity were also assessed at baseline and 12 weeks. Intent-to-treat (ITT) analysis using repeated measures ANOVA assessed changes and differences between groups in physical activity and self-reported outcomes at 12-weeks.

Results: Fifty participants representing 23 US States were recruited and randomized (80% female, 92% white, 68.0 ± 6.8 years, BMI 32.4 ± 6.6 kg/m^2, 6.1 ± 5.1 years since KR surgery). Retention at 12 weeks was higher in the Control group (95.6%) than Energize! (70.2%, p=0.02). No adverse events were related to participation in the study. Weekly adherence among completers (n=19) to the Energize! online program was 93.4% for video lessons, 87.6% planning of physical activity, and 89.9% for logging physical activity. ITT analyses revealed a significant time ($p< 0.05$) and group by time interaction ($p< 0.01$) for MVPA (Figure 1) and steps/day. The change in physical activity from baseline to 12 weeks was significantly greater in Energize! (MVPA: 47.0 ± 68.5 min/week; steps: 813.1 ± 1165.1

steps/day) versus the Control group (MVPA: -5.3 ± 23.5 min/week; steps: -87.0 ± 1078.5 steps/day). There were no differences across time or between groups for pain interference, pain intensity, physical function, or cognitive function (Table 1).

Conclusion: A fully automated online program was effective at increasing physical activity levels in adults with KR at 12 weeks. Future studies should examine the long-term effects of this online program to examine maintenance of physical activity levels and potential improvements in patient-reported outcomes. Additionally, strategies to maintain engagement and retention in fully remote programs should be explored.

Variable	Energize! Condition (N=27)	Control Condition (N=23)	Time	Group	Group X Time
	Mean (SD)	Mean (SD)	p	p	p
MVPA/week					
Baseline	55.04 (51.92)	52.83 (71.90)	**.008**	.170	**.001**
12-weeks	101.96 (103.83)	47.52 (66.01)			
Steps/Day					
Baseline	3871.84 (4684.90)	3556.79 (2015.85)	**.028**	.162	**.007**
12-Weeks	4684.90 (2352.15)	3469.83 (1663.76)			
Physical Function (T-Score)					
Baseline	44.94 (5.37)	41.43 (6.76)	.081	**.023**	.204
12-Weeks	44.72 (5.84)	40.07 (7.40)			
Cognitive Function (T-Score)					
Baseline	50.36 (7.71)	48.95 (8.35)	.116	.202	.142
12-Weeks	50.27 (7.79)	46.58 (5.49)			
Pain Interference (T-Score)					
Baseline	53.19 (6.90)	54.22 (6.28)	.790	.520	.766
12-Weeks	52.63 (8.47)	54.25 (9.99)			
Pain Intensity (T-Score)					
Baseline	43.56 (7.10)	45.38 (6.83)	.128	.671	.208
12-Weeks	45.73 (7.54)	45.91 (8.33)			

Table 1: Changes in Physical Activity and Patient-Reported Outcomes Within Groups Across Timepoints

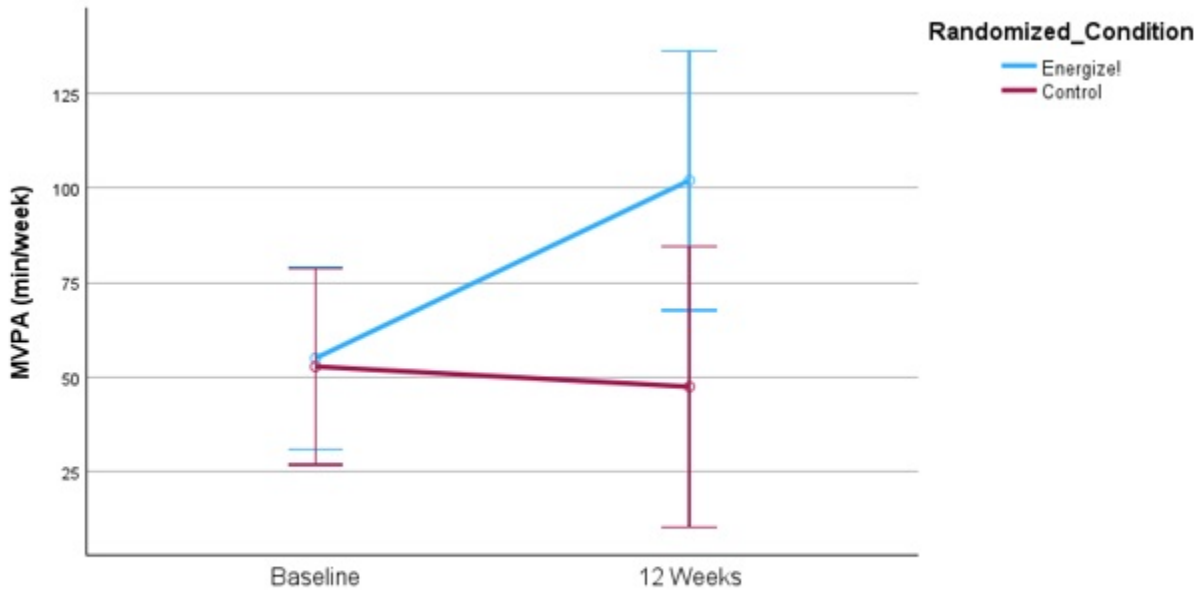

Figure 1: Changes in MVPA across time between the Energize! and Control groups

Disclosures: S. Jamieson: None; **J. Unick**: None; **K. Horn**: None; **H. Prine**: None; **C. Yang**: None; **C. Pellegrini**: None.

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