Academy of Orthopaedic Physical Therapy, APTA, Inc.
Grant Program
Final Report Form

Date: 8/20/24

Name of Investigators: Hiral Master, Rogelio Coronado, Kristin Archer, Jacquelyn Pennings, Bethany Rhoten, Byron Stephens, Amir Abtahi, Susan Vanston
Name of Grant: Telehealth physical activity intervention after lumbar spine surgery
Award Period: July 1, 2021 to July 1, 2023
(Initial award date is the date that the award was made to your institution)

1. Briefly summarize major accomplishments of this project.

This grant proposed to conduct a randomized controlled trial in 60 patients undergoing spine surgery. The primary aim of the trial was to determine the preliminary efficacy of an 8-week (8 remote sessions) postoperative physical therapist-delivered telehealth intervention aimed at improving physical activity, physical function, disability, and pain at 6 and 12 months after spine surgery. Additional aims were focused on feasibility and acceptability of the telehealth intervention.

This trial was completed, and 60 patients were randomized to the telehealth intervention (n=30) and usual care (n=30) as planned. Retention was high with 92% and 95% of patients completing objective physical activity and patient-reported follow-up assessments, respectively, at 6-months and 92% and 93% at 12 months.

Feasibility and acceptability results have been published in Phys Ther in 2023 and were presented as part of a symposium at Combined Sections Meeting in 2024. The trial manuscript is currently being prepared and results will be presented at the North American Spine Society 39th Annual Meeting in September 2024. The abstract has been selected as part of the best oral paper presentations at NASS. An abstract on the trial results has also been submitted for consideration for Combined Sections Meeting in 2025.

2. Provide a one-paragraph summary of results or abstract suitable for posting on the Academy website.

Purpose/Hypothesis: The objective of this randomized controlled trial (NCT04968821) was to determine the efficacy of an 8-session physical activity intervention that includes wearable technology and remote physical therapist (PT) support in patients undergoing lumbar spine surgery. The primary outcome was objective physical activity (accelerometer). Secondary outcomes included time spent in moderate-to-vigorous (MVPA) and sedentary physical activity and patient-reported outcomes (PROs) of physical function (PROMIS PF), disability (ODI), back and leg pain intensity (0-10 NRS), and return to physical activity. **Number of Subjects:** Patients undergoing surgery for a lumbar degenerative condition using laminectomy with or without fusion were randomized to telehealth physical activity intervention (n=30) or usual postoperative care (n=30). **Materials/Methods:** Outcome assessments occurred preoperatively and at 6- and 12-months after surgery. Participants wore an accelerometer for a 7-day period. Questionnaires were completed via a web-based survey. Randomization occurred after surgery and stratified by

fusion status. At 2-weeks after surgery, participants randomized to the intervention received a wearable device (Fitbit Inspire HR) and a daily step goal tracking sheet and were scheduled for telehealth counseling by a licensed PT trained in motivational interviewing. Eight intervention sessions were delivered weekly over a web-based platform (Zoom). Sessions included setting weekly walking goals and reviewing activity with the Fitabase system. Analyses were intent-to-treat using multivariable proportional odds regression for physical activity and linear and logistic regression models for PROs that adjusted for the outcome at baseline and sex. The level of significance was set at α=0.05. **Results:** The majority of participants had spinal stenosis (62%) and underwent a fusion (63%). Follow-up rate at 12-months was 92%. Intervention participants had higher activity counts per day (OR 2.9; 95%CI 1.06 to 8.2) and time spent in MVPA (OR 4.2; 95%CI 1.5 to 11.9) at 6-months, and less bouted sedentary activity (OR 0.28; 95%CI 0.11 to 0.75) and higher continuous activity counts (OR 2.9; 95%CI 1.08 to 7.8) at 12 months. Statistically significant group differences were found for physical function, back pain, and return to activity at 6-months, and back and leg pain at 12-months. Intervention participants had PROMIS PF score 3.9-points higher [95%CI, 0.32 to 7.4], back pain 1.2-points lower [95%CI, -2.4 to -.03] and were 6 times more likely to return to physical activity [95%CI, 1.9 to 21.7] at 6-months and back pain 1.6-points lower [95%CI, -2.7 to -0.53] and leg pain 1.4-points lower [95%CI, -2.8 to -0.06] at 12-months than usual care group. **Conclusion:** Results from a clinical trial found that a telehealth physical activity intervention improved physical activity, physical function, and pain outcomes after spine surgery. **Clinical relevance:** Wearable technology and PT counseling appear to be a promising strategy for promoting physical activity after surgery.

3. Attach a list of your publications published or accepted during the past year, or currently being written. Send reprints when available. List presentations made and abstracts accepted for presentation based on this work. Indicate with an asterisk (*) those publications supported by Academy of Orthopaedic Physical Therapy funding.

Publications:
Master H, Coronado RA, Whitaker S, Block S, Vanston SW, Pennings JS, Gupta R, Robinette P, Stephens B, Abtahi A, Schwarz J, Archer KR. Combining wearable technology and telehealth counseling for rehabilitation after lumbar spine surgery: feasibility and acceptability of a physical activity intervention. **Phys Ther**. 2023 Jul 21:pzad096. PMID: 37478463

Abstracts:
Archer KR, Master H, Coronado RA, Pennings JS, Cole KR, Hymel AM, Priest A, Oleisky E, Sullivan A, Vanston SW, Schwarz J, Zuckerman SL, Abtahi AM, Stephens BF. Physical Activity Intervention to Improve Surgical Spine Outcomes (PASS Trial). North American Spine Society 39th Annual Meeting, Chicago, IL, September 25-28, 2024.

Symposium:
Faculty Member and Symposium Speaker on study for: “Advances in Rehabilitation Technology to Improve Health Outcomes.” American Physical Therapy Association: Combined Sections Meeting**.** Boston, MA, February 16, 2024.

Budget:

4. Provide a budget, using the original approved budget. Indicate total funds spent to date per major categories. If there was > 25% deviation (greater or less spent) of use of funds for any of the budget category, please BRIEFLY indicate the rationale. **See below**
5. Budget: please send out a final print-out from your institution indicating monies spent per major categories. ***Attached***

Budget Item	Original	Funds Spent
Salary Support	$7,517	$9.700
Patient Compensation	$13,500	$10.925
Shipping	$720	
Software	$2767	$2,899
Lab supplies	$5,496	$6,476
Total:	$30,000	$30,000

Hiral Master

Your Signature

8/20/2024

Date