

Clinical Outcome Assessments (COA) Qualification Program
DDT COA #000102: Physical Activity Accelerometry Assessment for
Analgesic Clinical Trials (PAACT)
Letter of Intent

Administrative Structure:

Description of the submitter including, but not limited to, principal investigator(s), working group member(s), institutions, and contact information not contained within the cover letter.

The Physical Activity Accelerometry Assessment for Analgesic Clinical Trials (PAACT) tool will be developed by the Analgesic, Anesthetic, and Addiction Clinical Trial Translations, Innovations, Opportunities, and Networks (ACTTION) public-private partnership.

Principal investigators: Kushang V. Patel and Dennis C. Turk from the University of Washington, and Robert H. Dworkin from the University of Rochester (see cover letter for contact information)

Working group members will include experts in patient-reported outcomes (PRO) development (e.g., Shannon M. Smith, University of Rochester; Dagmar Amtmann, University of Washington; Bryce Reeve, University of North Carolina), accelerometry research (e.g., David R. Bassett, University of Tennessee; Gregory J. Welk, Iowa State University); biostatistics (e.g., Vadim Zipunnikov, Johns Hopkins University; Michael P. McDermott, University of Rochester), patient engagement and advocacy (e.g., Penney Cowan, American Chronic Pain Association; Christin Veasley, Chronic Pain Research Alliance), pain assessment and analgesic clinical trials (e.g., John T. Farrar, University of Pennsylvania; Nathaniel P. Katz, Analgesic Solutions, Tufts University).

Concept(s) of interest (COI) for meaningful treatment benefit:

A description of the meaningful aspect of patient experience that will represent the intended benefit of treatment (e.g., presence/severity of symptoms, limitations in performance of daily activities)

The COI assessed by PAACT will be physical activity (total volume of activity and time spent in specific activities such as walking and stair climbing).

Provide a conceptual framework for the COA

There is no single, widely used conceptual framework for physical activity assessment. However, Pettee Gabriel and colleagues [1] developed a framework to categorize the components of human movement that can guide physical activity assessment. One component identifies the types of physical activity and sedentary behaviors that can be measured with either self-reported or objective physical activity assessment tools (e.g., accelerometry), and the second component identifies the physiological attributes of physical activity (e.g., energy expenditure, maximal oxygen consumption). This framework highlights the importance of considering study design, population, and specific activity characteristics when selecting (or developing) a physical activity assessment tool.

COU for COA qualification:

Targeted study population including a definition of the disease and selection criteria for clinical trials (e.g., baseline symptom severity, patient demographics, comorbidities, language/culture groups)

The initial targeted study population for PAACT will be non-cognitively impaired adults with a diagnosis of osteoarthritis (OA) of the knee (unilateral or bilateral) based on the American College of Rheumatology criteria and knee pain while walking on a flat surface (rating of ≥ 4 on the 0-10 pain-walking item of the Western Ontario and McMaster Universities Osteoarthritis Index (WOMAC)). However, we expect to eventually expand the targeted populations for PAACT to other painful musculoskeletal conditions, such as chronic low back pain (Quebec Task Force Classification 1 and 2) and hip OA, once the protocol and measurement properties of PAACT have been established in knee OA.

Targeted study design and statistical analysis plan (includes the role of the planned COA in future drug development clinical trials, including the planned set of primary and secondary endpoints with hierarchy, if appropriate)

The targeted study designs are cross-over and parallel clinical trial designs, including specialized designs (e.g., adaptive; enriched-enrollment randomized withdrawal). The primary statistical analyses for these targeted study designs would examine group differences in accelerometer-derived measures of physical activity in the study treatment arm(s) compared with comparator arm(s) (e.g., placebo, other active treatment, different dosages). Secondary statistical analyses would include but not be limited to comparing the proportion of treatment responders (e.g., $\geq 30\%$ improvement in physical activity) between the study treatment and comparator arms. The development of PAACT will involve methodological studies that will define clinically meaningful change in outcomes of total volume and intensity of activity as well as time spent in specific activities.

Applicable study settings for future clinical trials

- ***Geographic location with language/culture group***
- ***Other study setting specifics (e.g., inpatient versus outpatient)***

The PAACT tool will initially be applicable in outpatient study settings in the United States, Canada, and Europe with English-speaking populations. However, we eventually plan to translate PAACT's written instructions on wearing the accelerometer (for study participants) into other languages and therefore the applicable study settings for future clinical trials using PAACT could expand to other countries.

COA type: Digital Monitoring Clinical Outcome Assessment

The PAACT tool does not conform to any of the 4 types of COA measures, as it does not involve any reporting by patients, clinicians, or other observers. In addition, unlike a performance-based outcome that involves performance of a specific task in a standardized environment (e.g., clinic), PAACT will passively monitor a person's movements in their "natural environment" (e.g., at home or work). Please see the description of the PAACT tool below.

References

1. Pettee Gabriel KK, Morrow JR, Woolsey AL. Framework for physical activity as a complex and multidimensional behavior. *J Phys Act Health*. 2012;9:S11-S18.