CORE COMPONENTS AND ADAPTABLE PERIPHERY OF THE KHEOPS CLINICAL EXERCISE ONCOLOGY PROGRAM: EVALUATION 15 YEARS POST-IMPLEMENTATION

Aude-Marie Foucaut, Mélina Ardjoune, Rémi Gagnayre

University Sorbonne Paris Nord, Health Educations and Promotion Laboratory, LEPS, UR 3412, F-93430, Villetaneuse, France

Introduction

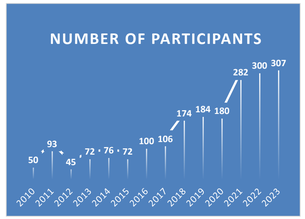
- **Feasibility**, **safety** and **benefits** of exercise on the biopsychosocial health of patients during and beyond cancer are highlighted [1-9]
- **Guidelines** regarding the **exercise modalities** according to cancer type have been refined through RCTs and meta-analysis [10]
- But the **deployment of evidence-based exercise programs** remains inconsistent and their **implementation strategies** are underexplored
- **The aim of this study is to deepen this topic through the example of an exercise program in oncology** and to highlight [11]:
  - Its "**core components**", essential to the program fidelity and expected effects
  - Its "**adaptable periphery**", that can be tailored without compromising the intervention integrity (e.g. for program scaling)

Methods

- **Implementation and process evaluation** [12] of the KHEOPS program of the Léon Bérard Comprehensive Cancer Center (Lyon, France) were carried out **retrospectively**
- The **main stakeholders** were interviewed (coordinator, qualified exercise professionals) **by external assessors**
- Verbatims were categorized into **core components** or **adaptable periphery** regarding stakeholders' perceptions of the importance of certain components for program development, sustainability, fidelity and safety, and/or whether any elements could have been different without influencing program efficiency
- Stakeholders gave their insite and **agreed on the latest version of the categorization**

Results

- The free KHEOPS program started in 2010 and showed positive effects in breast cancer patients [13]
- The program aims to **support patients to initiate or maintain physical activity after diagnosis**
- Over the past **15 years**, **2,041 beneficiaries**, regardless of cancer site, have been **supervised** by an equivalent of **2 full-time Qualified Exercise Professionals (QEPs) hired by the center** under permanent contract
- Semi-structured interviews showed multiple components that led to its sustainable and safe implementation for a growing population (Table 1).



Discussion

- Over 34 components (10 core components and 24 adaptable periphery), 10 are consistent with prior research [14] (* in Table 1)
- This is the 1st milestone to an international exploration of other notable implementations in exercise oncology to identify similarities and disparities between core components and adaptable periphery and build a future shared framework: *International OncoExGuide*
- Identifying implementation strategies might support stakeholders to develop accessible and durable programs in oncology












Table 1: Core Components and Adaptable Periphery of the Kheops Clinical Exercise Oncology Program (Abbr.: QEPs= Qualified Exercise Professionals; *consistent with prior research [14])

Core Components	**Resource mobilization**	Strong organizational support*
		Presence of a clinical exercise coordinator
		Program visibility within the center
	Organization	Team of trained QEPs with cross-disciplinary roles
		Constant presence of QEPs in the center, and cross-services projects*
		Rotation of multiple QEPs to maintain the program open throughout the entire year
	Triage and safety	Systematic baseline assessments including medical history, fitness, motivations, expectations, and preferences
		Access to patient medical records by QEPs
	Intervention components	Co-construction of a 26-session program tailored to patients' needs, preferences, and treatment modalities* (3 to 5 months to complete the sessions)
		Flexible and modular program, tailored to the individual, while maintaining at least one aerobic session and one resistance training per week, and at least one group activity per week
Adaptable Periphery	**Resource mobilization**	Dedicated 3,200 ft² exercise facility in the comprehensive cancer center
	Organization	Duality between research and clinical programs and teams on exercise oncology
		Strong network with sports partners*
		Recent involvement of patient-partners who have participated in the program beforehand*
		Systematic and iterative quality evaluation of the program*
	Information and promotion	Program promotion through multiple and various channels within the center*
		Dedicated places for patients to meet QEPs: the exercise facility, and a little exercise room in the chemotherapy waiting area with a QEP on duty
		Program promotion by QEPs by meeting patients in the day hospital waiting room
		Regular conferences, forums, and meetings by QEPs for healthcare professionals, patients, families and family caregivers*
		Informal exchanges with healthcare professionals, mainly oncologists, nutritionist, sports medicine physician, registered dieticians, registered nurses, and nurse navigators*
	Referral	Specific day hospital for exercise and co-morbidity assessments for patients with metabolic risk factors
		Section in the computerized patient record, available to all healthcare professionals, that creates an automatic referral alert to the QEPs
		Direct scheduling of baseline assessments with QEPs by the healthcare professionals' medical assistants
	Triage and safety	Specific consultation offered with a Sport Medicine Physician before the participation to the exercise program, and in coordination with the QEPs: for co-morbidities (at the patient or the healthcare professional request), for advanced cancer and vulnerable patients, and/or with a dietician for overweight or obesity
	Professional training and awareness	Motivational interviewing training for QEPs
		Punctual trainings for center professionals on exercise oncology carried out by QEPs*
		Service enabling employees to take part in exercise sessions in the same exercise facility and with the same QEPs as patients
	Intervention components	Exercise program schedule and location planned according to the type of treatment (i.e. chemotherapy, radiotherapy) or the type of care modality (i.e. hospitalized on site, semi-sterile chamber)
		Wide range of proposed activities
		In-person, online, and combined in-person and online exercise sessions depending on distance of the patients' residence
		Text message recall by QEPs after 3 non-attended sessions
		Discovery sessions with sports partners throughout the year
		Organization of an annual hiking event with current and former participants, their families and the center professionals
		Participation to Therapeutic Patient Education programs

References and Acknowledgements

We wish to acknowledge the Léon Bérard Cancer Center's Department of Prevention Cancer Environment team, especially Rodolf Mongondry and Manon Gouez for their participation | [1] Hong F, *et al.* Exercise Intervention Improves Clinical Outcomes, but the "Time of Session" is Crucial for Better Quality of Life in Breast Cancer Survivors: A Systematic Review and Meta-Analysis. Cancers (Basel). 2019;11(5). [2] Kreutz C, *et al.* Effects of physical and mind-body exercise on sleep problems during and after breast cancer treatment: a systematic review and meta-analysis. Breast Cancer Res Treat. 2019;176(1):1-15. [3] Soares Falcetta F, *et al.* Effects of physical exercise after treatment of early breast cancer: systematic review and meta-analysis. Breast Cancer Res Treat. 2018;170(3):455-76. [4] Gao R, *et al.* Exercise intervention for post-treatment colorectal cancer survivors: a systematic review and meta-analysis. J Cancer Surviv. 2020;14(6):878-93. [5] Scott JM, *et al.* Efficacy of Exercise Therapy on Cardiorespiratory Fitness in Patients With Cancer: A Systematic Review and Meta-Analysis. J Clin Oncol. 2018;36(22):2297-305. [6] Singh B, *et al.* Exercise and colorectal cancer: a systematic review and meta-analysis of exercise safety, feasibility and effectiveness. Int J Behav Nutr Phys Act. 2020;17(1):122. [7] Torregrosa C, *et al.* Physical Activity as the Best Supportive Care in Cancer: The Clinician's and the Researcher's Perspectives. Cancers (Basel). 2022;14(21). [8] Mustian KM, *et al.* Comparison of Pharmaceutical, Psychological, and Exercise Treatments for Cancer-Related Fatigue. JAMA Oncology. 2017;3(7):961. [9] Courneya KS, *et al.* Structured Exercise after Adjuvant Chemotherapy for Colon Cancer, New England Journal of Medicine, Online first, June 2025. [10] Campbell KL, *et al.* Exercise Guidelines for Cancer Survivors: Consensus Statement from International Multidisciplinary Roundtable. Med Sci Sports Exerc. 2019;51(11):2375-90. [11] Damschroder LJ, *et al.* Fostering implementation of health services research findings into practice: a consolidated framework for advancing implementation science. Implementation science 2009;4:50. [12] Mendel P, *et al.* Interventions in organizational and community context: a framework for building evidence on dissemination and implementation in health services research. Adm Policy Ment Health. 2008;35(1-2):21-37. [13] Foucaut AM, *et al.* Reduction of health risk factors through an adapted physical activity program in patients with breast cancer. Support Care Cancer. 2014 Apr;22(4):1097-104. [14] Czosnek L, *et al.* "Now is the time for institutions to be investing in growing exercise programs as part of standard of care": a multiple case study examining the implementation of exercise oncology interventions. Support Care Cancer. 2023 Jun 26;31(7):422. | Image credits: images are captured and retrieved from the Léon Bérard Center's institutional website and its Youtube channel, or are from personal pictures.