

## Reply to

Citation for published version (APA):

Heldens, A. F. J. M., Bongers, B. C., de Vos-Geelen, J., van Meeteren, N. L. U., & Lenssen, A. F. (2017). Reply to: Exercising patient-centredness in prehabilitation programs. *European Journal of Surgical Oncology*, 43(2), 511-512. <https://doi.org/10.1016/j.ejso.2016.10.004>

**Document status and date:**

Published: 01/02/2017

**DOI:**

[10.1016/j.ejso.2016.10.004](https://doi.org/10.1016/j.ejso.2016.10.004)

**Document Version:**

Publisher's PDF, also known as Version of record

**Document license:**

Taverne

**Please check the document version of this publication:**

- A submitted manuscript is the version of the article upon submission and before peer-review. There can be important differences between the submitted version and the official published version of record. People interested in the research are advised to contact the author for the final version of the publication, or visit the DOI to the publisher's website.
- The final author version and the galley proof are versions of the publication after peer review.
- The final published version features the final layout of the paper including the volume, issue and page numbers.

[Link to publication](#)

**General rights**

Copyright and moral rights for the publications made accessible in the public portal are retained by the authors and/or other copyright owners and it is a condition of accessing publications that users recognise and abide by the legal requirements associated with these rights.

- Users may download and print one copy of any publication from the public portal for the purpose of private study or research.
- You may not further distribute the material or use it for any profit-making activity or commercial gain
- You may freely distribute the URL identifying the publication in the public portal.

If the publication is distributed under the terms of Article 25fa of the Dutch Copyright Act, indicated by the "Taverne" license above, please follow below link for the End User Agreement:

[www.umlib.nl/taverne-license](http://www.umlib.nl/taverne-license)

**Take down policy**

If you believe that this document breaches copyright please contact us at:

[repository@maastrichtuniversity.nl](mailto:repository@maastrichtuniversity.nl)

providing details and we will investigate your claim.

Correspondence

**Reply to: Exercising patient-centredness in prehabilitation programs**



Augmented collective understanding of human nature facilitates stepwise improvement of health care interventions, be it for instance pharmacological or psychological interventions. The very same holds particularly true for interventions like prehabilitation with help of physical exercise training. Underlying here are recent psychobiological understandings combined with critical reflections of leading scientists in new inspiring concepts like Predictive, Preventive, Personalized, and Participatory (P4) medicine.<sup>1</sup> This concept and others pay attention to the uniqueness of individual patients and, for the most based on this uniqueness, the need for individual patient-centredness. The highly appreciated response of colleague Wright adds up to this literature and extends these developments towards the domain of physical exercise training programs. Wright holds, in line with for example Hoogeboom et al.,<sup>2</sup> a plea for the uniqueness of individual patients, as well as for patient-centredness in exercise prehabilitation in order to improve patient adherence, especially for the most vulnerable. A plea also for the reinvention of physical exercise training. With respect to this plea, we formerly introduced the concept of “*therapeutic validity*”,<sup>3</sup> as an important add on for randomized controlled trials and in systematic reviews that, up till then, advised and evaluated methodological quality rather than the content of the physical exercise training program itself. Physical exercise training programs in randomized controlled trials often lack overload, include the younger and more healthy subgroup of patients, and fail to bring out the full potential of their patients.<sup>3</sup> The hereto developed CONTENT-scale urged therapists and researchers to pay more attention to the content of a physical exercise training program and emphasized that this should be tailored to the individual patient, rather than having a ‘one size fits all’ approach.

In our pilot study,<sup>4</sup> patients were offered physical exercise training *during* the period in which they underwent neoadjuvant chemoradiotherapy (NACRT). This was

actually the first study that investigated the feasibility and preliminary effectiveness of this approach to prevent the often in clinical practice seen deterioration of physical fitness during NACRT. Because the period of NACRT is often a physically and mentally demanding period, we specifically chose for an in-hospital supervised physical exercise training program – instead of a home-based program – where training sessions at our physical therapy outpatient clinic could be combined with the clinic visits for the radiation schedule of the patients. A strategy that was highly appreciated by the participating patients.<sup>4</sup>

Our study showed favorable results on feasibility, safety, adherence, and effectiveness in nine of thirteen patients (69%) who completed the preoperative physical exercise training program during NACRT. Four patients (31%) dropped out due to several reasons.<sup>4</sup> For these patients it might have been possible to participate in a preoperative physical exercise training program in the period between NACRT and surgery, such as described by West et al.<sup>5</sup> The seven (35%) out of twenty eligible patients that refused to participate, might have been willing to participate when a more patient-centred and individually tailored physical exercise training program was provided at home. A program that includes the patient especially, as well as their relatives, and (in)formal caregivers. Together they should aim to preserve or even improve physical fitness for patients exposed to the challenge(s) of NACRT and/or major abdominal surgery to improve treatment outcome, preferably via a multimodal approach including psychosocial and nutritional counseling – if necessary on the base of diagnostics – as well. In fact, prevention of a complicated postoperative course and a rapid return to adequate performance of (instrumental) activities of daily living in patients is mandatory and essential to preserve independent functional performance and perceptions of quality of life.<sup>6</sup> This may also lead to an improvement in health-care quality experiences, and even lead to further cost-savings.

An important next step is indeed to improve participation rate and adherence of patients in the exercise prehabilitation program. Firstly, patients, their relatives, and their (in)formal caregivers should be sufficiently educated and motivated about the significance of physical activity and physical fitness before and after surgery for adequate

DOI of original article: <http://dx.doi.org/10.1016/j.ejso.2016.09.013>

<http://dx.doi.org/10.1016/j.ejso.2016.10.004>

0748-7983/© 2016 Elsevier Ltd, BASO ~ The Association for Cancer Surgery, and the European Society of Surgical Oncology. All rights reserved.

post-surgical functional recovery. Secondly, the program should be more patient-centred, meaning personalized to the short- and long-term goals, needs, preferences, and physical and mental potentials of the patient. Thirdly, the physical exercise program should be planned, structured, executed, and monitored with the patient, preferably within his or her own living situation, as there is evidence<sup>7,8</sup> that vulnerable patients are less likely to participate in a clinic-based exercise program than they are in a home-based physical exercise training program. Best would also be that the revenues of the program are monitored by patients themselves, where and when necessary supported by their relatives and their (in)formal caregivers, as well as by their physical therapist by frequently using functional tests to direct and titrate exercise dosage.<sup>9</sup> This will probably improve their involvement and motivation and thereby adherence and satisfaction. Preferably, the patient decides, well informed by the physical therapist, the anesthesiologist, and the surgeon, and also with respect to the medical condition, when he or she is indeed fit to operate on. Thereupon the decision of planning for surgery is best made.

#### Conflict of interest statement

The authors declare no conflicts of interest.

#### References

- Hood L, Friend SH. Predictive, personalized, preventive, participatory (P4) cancer medicine. *Nat Rev Clin Oncol* 2011;**8**(3):184–7.
- Hoozeboom TJ, Kittelson AJ, van der Sluis G, van Meeteren NL. Evidence-based practice in physiotherapy: time to involve the patient? *Physiotherapy* 2014;**100**(4):363–4.
- Hoozeboom TJ, Oosting E, Vriezolk JE, et al. Therapeutic validity and effectiveness of preoperative exercise on functional recovery after joint replacement: a systematic review and meta-analysis. *PLoS One* 2012;**7**(5).
- Heldens AF, Bongers BC, de Vos-Geelen J, van Meeteren NL, Lenssen AF. Feasibility and preliminary effectiveness of a physical exercise training program during neoadjuvant chemoradiotherapy in individual patients with rectal cancer prior to major elective surgery. *Eur J Surg Oncol* 2016;**42**(9):1322–30.
- West MA, Loughney L, Lythgoe D, et al. Effect of prehabilitation on objectively measured physical fitness after neoadjuvant treatment in preoperative rectal cancer patients: a blinded interventional pilot study. *Br J Anaesth* 2015;**114**(2):244–51.
- Dronkers JJ, Witteman BJ, van Meeteren NL. Surgery and functional mobility: doing the right thing at the right time. *Tech Coloproctol* 2016;**20**(6):339–41.
- Oosting E, Jans MP, Dronkers JJ, et al. Preoperative home-based physical therapy versus usual care to improve functional health of frail older adults scheduled for elective total hip arthroplasty: a pilot randomized controlled trial. *Arch Phys Med Rehabil* 2012;**93**(4):610–6.
- Hulzebos EH, van Meeteren NL, van den Buijs BJ, de Bie RA, Brutel de la Rivière A, Helder PJ. Feasibility of preoperative inspiratory muscle training in patients undergoing coronary artery bypass surgery with a high risk of postoperative pulmonary complications: a randomized controlled pilot study. *Clin Rehabil* 2006;**20**(11):949–59.
- Glasziou P, Irwig L, Mant D. Monitoring in chronic disease: a rational approach. *BMJ* 2005;**330**(7492):644–8.

A.F.J.M. Heldens\*

Department of Epidemiology, Faculty of Health,  
Medicine and Life Sciences, School for Public Health  
and Primary Care (CAPHRI), Maastricht University,  
P.O. Box 616, 6200 MD Maastricht, The Netherlands  
Department of Physical Therapy, Maastricht University  
Medical Center, P.O. Box 5800, 6202 AZ Maastricht,  
The Netherlands

B.C. Bongers

Department of Epidemiology, Faculty of Health,  
Medicine and Life Sciences, School for Public Health  
and Primary Care (CAPHRI), Maastricht University,  
P.O. Box 616, 6200 MD Maastricht, The Netherlands  
E-mail address: bart.bongers@maastrichtuniversity.nl

J. de Vos-Geelen

Department of Internal Medicine,  
Division of Medical Oncology,  
School for Oncology and Developmental Biology (GROW),  
Maastricht University Medical Center, P.O. Box 5800,  
6202 AZ Maastricht, The Netherlands  
E-mail address: judith.de.vos@mumc.nl

N.L.U. van Meeteren

Department of Epidemiology,  
Faculty of Health, Medicine and Life Sciences,  
School for Public Health and Primary Care (CAPHRI),  
Maastricht University, P.O. Box 616,  
6200 MD Maastricht, The Netherlands  
Top Sector Life Sciences & Health/Health ~ Holland,  
P.O. Box 93035, 2509 AA The Hague, The Netherlands  
E-mail address: meeteren@health-holland.com

A.F. Lenssen

Department of Epidemiology, Faculty of Health,  
Medicine and Life Sciences,  
School for Public Health and Primary Care (CAPHRI),  
Maastricht University, P.O. Box 616,  
6200 MD Maastricht, The Netherlands  
Department of Physical Therapy,  
Maastricht University Medical Center, P.O. Box 5800,  
6202 AZ Maastricht, The Netherlands  
E-mail address: af.lenssen@mumc.nl

\*Corresponding author. Department of Epidemiology,  
Faculty of Health, Medicine and Life Sciences,  
School for Public Health and Primary Care (CAPHRI),  
Maastricht University, P.O. Box 616,  
6200 MD Maastricht, The Netherlands.  
E-mail address: aniek.heldens@mumc.nl

Accepted 11 October 2016