

Opportunities of Preoperative Training Programs for Cardiac Patients

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ABSTRACT

Coronary artery disease is a current disease of the cardiovascular system which often takes severe courses and entails surgical interventions. In order to make the postoperative period and recovery process more efficient, studies have investigated the effects of preoperative intervention measures recently. Initial findings show positive effects on various outcomes. Preoperative training programs have emerged as valuable tools in enhancing the physical and psychological well-being of cardiac patients before surgery.

Keywords: Preoperative intervention; Coronary heart disease; Prehabilitation; Cardiac surgery; Cardiac rehabilitation

ABOUT THE STUDY

Recently, studies on preoperative training programs-often called “prehabilitation” (prehab)-in cardiac patients have been increasingly carried out. Predominantly positive results are achieved in terms of physical performance, postoperative complication and quality of life [1,2]. So a great benefit is attributed to preoperative intervention measures.

Despite all the euphoria it must be mentioned that the structural conditions were very different, so no meaningful conclusions can be drawn at this point. Over the past few years different ways to preoperative interventions for cardiac patients have evolved. In the early years, the focus of research was on the effects on postoperative outcomes such as length of hospital stay and the occurrence of postoperative complications [2,4]. Attempts were made to influence the observed parameters with targeted breathing exercises or light physical activities. Currently the investigations are focusing on changes in the physical performance. Accordingly, the trials are designed with endurance training, strength training and gymnastics with different intensities [5,6].

It has been proven several times that dosed endurance training can lead to an increase in performance (esp. in 6-minute-walking-test) even in the preoperative setting. An intensity of 60%-75% of the maximum heart rate or maximum oxygen uptake seems to be useful [5-7]. A training time of up to approximately 25 minutes can apparently be easily managed by

the patients. What is crucial at this point is monitoring the electrocardiogram and well-being (no angina pectoris or similar) of the person exercising.

Studies also confirm the positive effects of strength training as part of cardiac rehabilitation [8]. However, strength or resistance training in preoperative setting has not been used in studies with high evidence yet. Nevertheless, it seems like there are also opportunities to prepare affected people better for the elective procedure and to counteract the associated muscle atrophy [5]. Future research should take up this finding and investigate it in the sense of a multimodal exercise-based intervention. It would be conceivable that patients benefit more from the combined strength and endurance training than endurance training alone, similar to what studies had shown in patients undergoing cardiac rehabilitation [9]. Considerations should also be made about intensity. One possible method is whether resistance training with less than 20% of 1 Repetition Maximum (RM) is sufficient so that only stimulation of muscular blood flow in the periphery is ensured. In contrast there is the view of triggering a muscle stimulus and training strength endurance (30%-50% of 1RM) or even generating hypertrophy (up to 70% of 1RM). Above all, the priority should be to avoid a valsava maneuver, which could occur at higher intensities and lead to an unwanted increase in blood pressure.

In addition, gymnastic exercises with a coordination focus could also be useful in order to influence the patients cognitive performance. These can reduce the incidence of postoperative

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delirium potentially [10]. Patients with anxiety disorders should also receive psychological/psychotherapeutic measures to minimize negative influences on postoperative convalescence caused by emotional disorder [11]. Supplementary, lectures should be given to convey information about healthy lifestyle and the mechanisms of exercises.

Two large-scale studies with multimodal content called “Praep-Go” and “Precovery” are currently being conducted [12,13]. The intervention program measures are based on cardiac rehabilitation and could therefore provide reliable information on initial findings, also due to their size. These could be used to derive uniform standards that are urgently needed to facilitate evident program development. At the same time a level must be created that enables communication between the institutions which are involved. If prehab is to be introduced as a new form of care, not only hospitals and rehabilitation facilities but also payers are asked to recognize the measures. In order for the processes to work together optimally, appropriate training for the staff involved is not irrelevant. After the decision for an elective surgical an affected person could be transferred directly to the care of rehabilitation facility which also carries out the cardiac rehabilitation in addition to prehab. On the one hand the measures would be coordinated perfectly because there is no lack of communication. On the other hand it offers the patient the advantage to be treated in a familiar environment after the serious procedure.

CONCLUSION

Prehab could offer great benefits to cardiac patients in their physical performance and thus also increase the effectiveness of the healing process after surgery. However, an optimal combination of exercises and non-sportive interventions is essential. Additionally, the infrastructure for such preoperative intervention program must be created. If so, cardiology prehab has the potential for a bright future.

REFERENCES

1. Steinmetz C, Bjarnason-Wehrens B, Walther T, Schaffland TF, Walther C. Efficacy of prehabilitation before cardiac surgery: A systematic review and meta-analysis. *Am J Phys Med Rehabil.* 2023;102(4):323-330.
2. Hulzebos EH, Smit Y, Helders PP, van Meeteren NL. Preoperative physical therapy for elective cardiac surgery patients. *Cochrane Database Syst Rev.* 2012;11(11):10118.
3. Arthur HM, Daniels C, McKelvie R, Hirsh J, Rush B. Effect of a preoperative intervention on preoperative and postoperative outcomes in low-risk patients awaiting elective coronary artery bypass graft surgery: a randomized, controlled trial. *Ann Intern Med.* 2000;133(4):253-262.
4. Stammers AN, Kehler DS, Afilalo J, Avery LJ, Bagshaw SM, Grocott HP, et al. Protocol for the PREHAB study-pre-operative Rehabilitation for reduction of hospitalization after coronary bypass and valvular surgery: A randomised controlled trial. *BMJ open.* 2015;5(3):7250.
5. Hake T, Obinger M, Spallek M, Rüdell U. Auswirkungen präoperativer Interventionsmaßnahmen bei KHK-Patient: Innen im Rahmen einer Falldarstellung. *Zentralblatt für Arbeitsmedizin, Arbeitsschutz und Ergon.* 2023;1-5.
6. Steinmetz C, Bjarnason-Wehrens B, Baumgarten H, Walther T, Mengden T, Walther C. Prehabilitation in patients awaiting elective coronary artery bypass graft surgery-effects on functional capacity and quality of life: A randomized controlled trial. *Clin Rehabil.* 2020;34(10):1256-1267.
7. Waite I, Deshpande R, Baghai M, Massey T, Wendler O, Greenwood S. Home-based preoperative rehabilitation (PREHAB) to improve physical function and reduce hospital length of stay for frail patients undergoing coronary artery bypass graft and valve surgery. *J Cardiothorac Surg.* 2017;12:1-7.
8. El-Sobkey SB. Resistance training is an effective exercise therapy in cardiac rehabilitation program for patients with coronary artery disease: A systematic review. *Beni-Suef Univ J Basic Appl Sci.* 2022;11(1):1-7.
9. Kambic T, Šarabon N, Lainscak M, Hadžić V. Combined resistance training with aerobic training improves physical performance in patients with coronary artery disease: A secondary analysis of a randomized controlled clinical trial. *Front Cardiovasc Med.* 2022;9:909385.
10. Humeidan M.L, Reyes J.P.C, Mavarez-Martinez A, Roeth C, Nguyen C.M, Sheridan E, et al. Effect of cognitive prehabilitation on the incidence of postoperative delirium among older adults undergoing major noncardiac surgery: The neurobics randomized clinical trial. *JAMA Surg.* 2021;156(2):148-156.
11. Tigges-Limmer K, Sitzler M, Gummert J. Perioperative psychological interventions in heart surgery: Opportunities and clinical benefit. *Dtsch Arztebl Int.* 2021;118(19-20):339.
12. Steinmetz C, Heinemann S, Kutschka I, Hasenfuß G, Asendorf T, Remppis BA, et al. Prehabilitation in older patients prior to elective cardiac procedures (PRECOVERY): Study protocol of a multicenter randomized controlled trial. *Trials.* 2023;24(1):533.
13. Schaller SJ, Kiselev J, Loidl V, Quentin W, Schmidt K, Mörgeli R, et al. Prehabilitation of elderly frail or Pre-Frail Patients Prior To Elective Surgery (PRAEP-GO): Study protocol for a randomized, controlled, outcome assessor-blinded trial. *Trials.* 2022;23(1):468.