A PROSPECTIVE COHORT STUDY ON CHANGES IN NUTRITIONAL STATUS AND PHYSICAL FITNESS AFTER MULTIMODAL PERSONALIZED PREHABILITATION AMONG COLON CANCER PATIENTS UNDERGOING SURGERY

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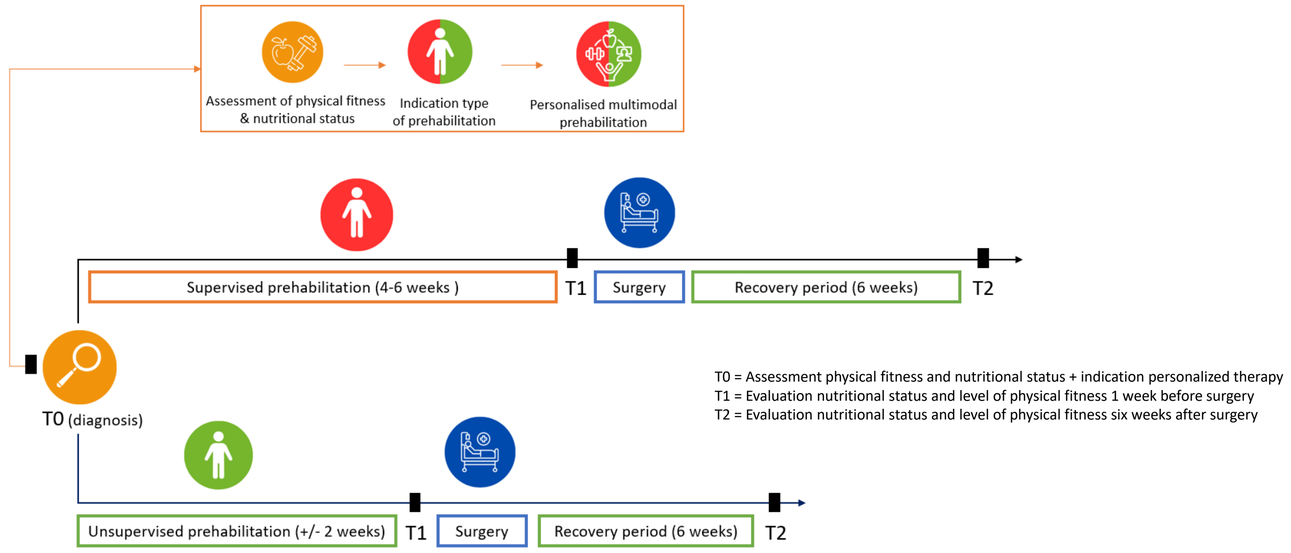
Background

Many hospitals **implemented prehabilitation programs**, but only few studies **evaluated** the results of **prehabilitation programs in real life clinical practice**. We assessed **changes in nutritional status and physical fitness** among **colon cancer** patients after **supervised or unsupervised multimodal prehabilitation** and explored clinical outcomes.

Methods

- **Screening at diagnosis** (T0) determined if patients were fit or unfit and subsequently referred to respectively **unsupervised or supervised prehabilitation**.
- Being unfit was defined as **severe malnutrition** (1) **and/or low cardiorespiratory fitness** (VO2max <18.2ml/kg/min) (2).
- Follow-up measurements were conducted a week before (T1) and 6 weeks after (T2) surgery.
- **Nutritional status** was assessed by the Patient Generated Subjective Global Assessment Short Form (PGSGA-SF), fat free mass (FFM) and protein intake.
- **Physical fitness** was evaluated through VO2max, handgrip strength (HGS), 5 times-sit-to-stand (5TSTS) test and maximal inspiratory pressure (MIP).
- **Clinical outcomes** were assessed by duration of hospital stay, days until mILAS is zero and postoperative complications.



Results

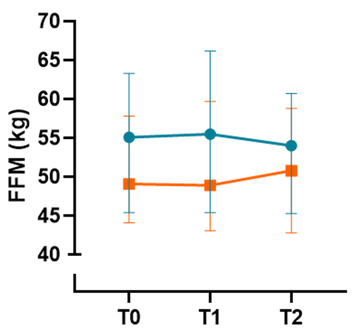
Unsupervised
Supervised

Result 1: Patient characteristics at diagnosis*

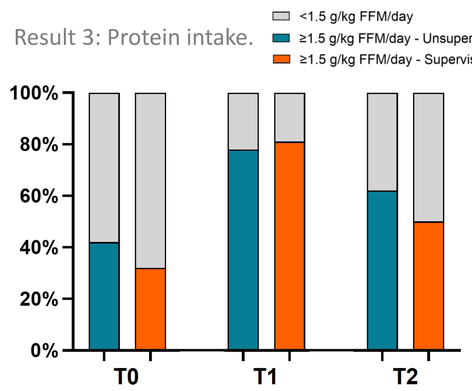
	Unsupervised prehabilitation (n=60)	Supervised prehabilitation (n=30)
Age[a]	72 (63-78)	79 (74-81)
Gender[b]	36 (60%) men	10 (33%) men
BMI classification[b]		
≥18.5 - <25 kg/m2	29 (49%)	8 (26%)
≥25 - <30 kg/m2	20 (33%)	11 (37%)
≥30 kg/m2	11 (18%)	11 (37%)
Cancer stage[b]		
I	21 (35%)	9 (30%)
II	16 (27%)	5 (17%)
III	21 (35%)	15 (50%)
IV	2 (3%)	1 (3%)
Anemia[b]	19 (32%)	22 (73%)

(a) Presented as median (Q1-Q3), (b) Presented as No., (%)
*Out of 107 patients diagnosed with colon cancer between July 2022 – September 2023, a total of 90 patients scheduled for elective surgical resection of primary colon cancer were included in this evaluation study.

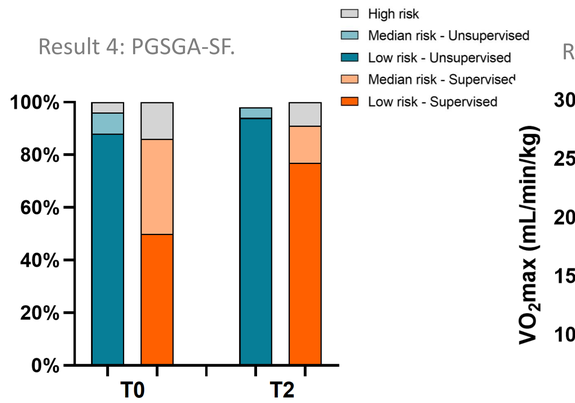
Result 2: Changes in FFM.



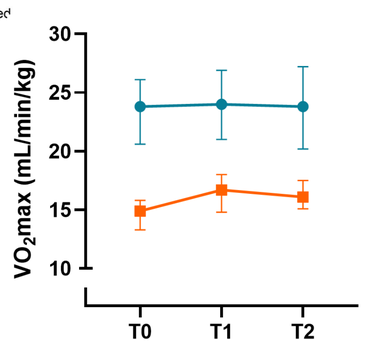
Result 3: Protein intake.



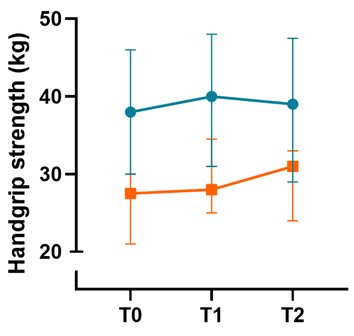
Result 4: PGSGA-SF.



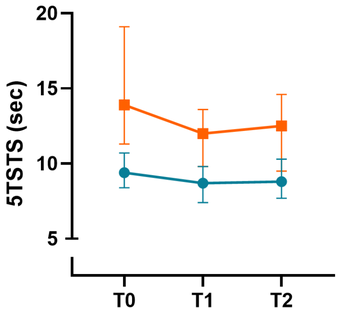
Result 5: Changes in VO2max.



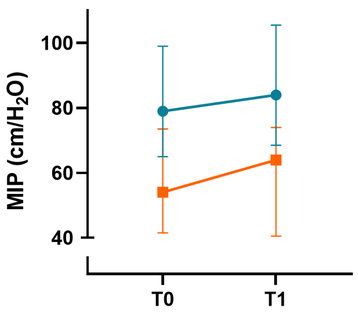
Result 6: Changes in HGS.



Result 7: Changes in 5TSTS test.



Result 8: Changes in MIP.



Result 9: Clinical outcomes and complications.

	Unsupervised prehabilitation (n=60)	Supervised prehabilitation (n=30)
Duration of hospital stay[a]	3 (3-4)	4 (3-7)
Days until mILAS is zero[a]	3 (3-4)	3 (2-5)
Non-surgical complications[b]	6 (7%)	3 (5%)
Surgical complications[b]		
-Mild (CDC 1-2)	4 (4%)	3 (5%)
-Severe (CDC 3-5)	8 (9%)	5 (8%)

(a) Presented as median (Q1-Q3), (b) Presented as No., (%)

Conclusions

Our findings indicate an **improved nutritional status and physical fitness before and after surgery among CC patients who were not fit upon diagnosis** and who therefore **received our supervised prehabilitation program**. Patients who were fit at diagnosis were able to at least preserve there nutritional status and physical fitness following our unsupervised prehabilitation program. We conclude that our **multimodal prehabilitation is beneficial for all patients undergoing colon cancer surgery when personalized to their nutritional status and state of physical fitness.**

References

1. **Cederholm T et al.** GLIM criteria for the diagnosis of malnutrition - a consensus report from the global clinical nutrition community. *Journal of cachexia, sarcopenia and muscle. 2019;10(1):207-17.*
2. **West M et al.** Validation of preoperative cardiopulmonary exercise testing-derived variables to predict in-hospital morbidity after major colorectal surgery. *British Journal of Surgery . 2016;103(6):744-52.*

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