

TWELVE-WEEK EXERCISE MEDICINE PROGRAMS

THE MENTAL & PHYSICAL BENEFITS OF A TWELVE-WEEK EXERCISE MEDICINE PROGRAM USED AS PRE-OPERATIVE PREHABILITATION & POST-OPERATIVE REHABILITATION. THE LATEST REAL-WORLD FINDINGS FROM CHRONIC CARE AUSTRALIA.

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BACKGROUND

Over the past twelve months we have been conducting a real-world observational study looking at the mental and physical benefits of specific twelve-week prehabilitation and twelve week rehabilitation exercise medicine programs, working with clients referred by orthopaedic surgeon Dr. Dan Fick of The Joint Studio. The findings offer enlightening insights into the important role value based exercise medicine programs can play as part of the prehab and rehab process.

Findings are in line with recent research papers noting that;

- ✦ Despite patients receiving an in-hospital physiotherapy program of some description, the optimum type of TKR exercise intervention in the early postoperative phase remains unknown. (5)
- ✦ Two out of three patient with moderate to severe knee OA eligible for TKR delayed surgery for at least 2 years following supervised non-surgical treatment. (7)
- ✦ Private or elective surgeries have been frozen three times in the past two years due to COVID19. (8)
- ✦ The average wait time to see a specialist is two to three months. (8)
- ✦ There are approximately 65,000 knee and 50,000 hip replacements undertaken each year in Australia with predictions that this number will increase by 200% over the next decade. (8)
- ✦ Mental and physical readiness is an important indicator of recovery post-surgery. (8)
- ✦ Patients with a higher ASA score (physical status classification score) at the time of surgery are more likely to have poorer outcomes post-surgery and undergo revision. (8)
- ✦ A negative history of mental health issues is linked to dissatisfaction post-surgery. (9)

OA and degenerative related Orthopaedic procedures are largely an elective space in healthcare. It lends itself to auxiliary prevention opportunities that can improve global health as well as joint specific health.

With a move towards value-based health care models that consider the whole health needs of the clients - these observations explore the real-world opportunities to:

- ✦ Reduce acute elective surgical loads on public and private hospitals.
- ✦ Improve pre op whole person health outcomes.
- ✦ Reduce surgical intervention risks including infection by improved BSL profiles.
- ✦ Improve mental health of clients preoperatively.
- ✦ Improve mental health of clients who elect ongoing conservative management.
- ✦ Reduce ongoing public and Private health costs.
- ✦ Improve private practice operational management of scheduled surgical load and pre op processes.
- ✦ Improve Post-operative outcomes.
- ✦ Empowerment of clients to decide the timing of surgery.
- ✦ The benefits of improved mental health profiles on surgical readiness

METHODS

100 patient over twelve months were referred to CCA and received an initial chronic disease triage appointment with an Exercise physiologist/physiotherapist before commencing a 12 week exercise medicine (EM) program using the 4 point MEDEX™ delivery protocol and management system.

Clients had various means of engaging in their program with 61% electing to complete the hybrid program. This involved home based exercise program with in person or virtual monthly reviews, reports and progression.

14% of these elected for additional one on one weekly appointments with the physiotherapist to manage soft tissue and ROM concerns.

26% engaged in in-clinic sessions in the CCA practice in Mosman Park and 13% in the CCA virtual clinic which delivers the program via 6:1 ratio supervised sessions with exercise physiologists (the same as the Mosman Park clinic).

The clients completed their program two-three times a week. As part of the chronic disease triage process the following biomarkers and questionnaire's were completed and repeated at every review:

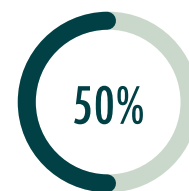
- ✦ Depression, Anxiety & Stress Scale
- ✦ Lower Extremity Functional Scale
- ✦ Percieved Health Assessment
- ✦ Menopause Related Quality of Life Scale in female clients 40-60yrs

As part of their team care arrangements throughout the program, clients had access to appropriate stepped care physiotherapy appointments, additional private exercise physiology appointments, podiatry appointments, appointments with clinical nutritionists and clinical psychologists. Appointments were made on a needs basis as evaluated by the exercise physiologist at every four-week review.

OF THE 100 REFERRED CLIENTS;



WERE REFERRED FOR THE MANAGEMENT OF CHRONIC HIP PAIN



WERE REFERRED FOR THE MANAGEMENT OF CHRONIC KNEE PAIN



WERE REFERRED FOR THE MANAGEMENT OF CHRONIC HIP AND KNEE PAIN

As part of the 4 point MEDEX protocol every program included a mental readiness, physical readiness, strength work and cardiovascular exercise.

RESULTS

OF THE 100 REFERRED CLIENTS 60% HAD NOT REQUIRED SURGERY WITHIN THE TWELVE-MONTH PERIOD.

Of those who elected for surgical intervention the average timeframe for this decision making was twelve weeks and the average correlating LEFS score for this decision was made when the client dropped under 60. Interestingly the client cohort reflected the AIHW published statistics relating to co and multimorbidity's with 50% of the clients having a secondary chronic conditions including cardiac related secondary pathologies, chronic metabolic conditions and diagnosed psychological conditions.

After ONE 12-week PREHAB exercise medicine program there was;

- 14% increase in depression scores
- 18% reduction in anxiety scores
- 10% increase in daily stress scores compared to the initial presentation
- 7% reduction in satisfaction with current health and wellbeing
- 15% improvement in satisfaction with body weight
- 27% increase in motivation to exercise
- 30% increase in satisfaction with fitness levels
- 11% decrease in satisfaction with sleep

Despite the observed increases in some of the DASS outcomes, and the decrease of the perceived current health and wellbeing score, 67% of clients attending both virtual and in clinic CCA chose to repeat their twelve week program, with 48% repeating the hybrid program.

It could be then assumed that the improvements in perceived body weight, motivation to exercise and fitness along with the reduction in anxiety where sufficient to sustain compliance and adherence.

Of the 100 referred clients 40% elected to engage in surgical intervention and follow the twelve-week post op rehabilitation program.

After the SECOND 12-week PREHAB exercise medicine program;

- 23% decrease in depression
- 36% decrease in anxiety scores
- 16% increase in daily stress scores compared to the initial presentation
- 37% Increase in satisfaction with current health and wellbeing
- 53% improvement in satisfaction with body weight
- 62% increase in satisfaction with fitness levels
- 17% increase in satisfaction with sleep

Given the tight correlations between pain and mental health. It could be concluded that the clients pain levels dropped in a similar manor and timeframe. Pain as a focus was avoided as part of this study due to the variance in pain perception scales amongst the cohort due to secondary conditions. As part of the 4 point MEDEX protocol there is a conscious avoidance of the focus on 'pain' as part of clinical discussions which may contribute to the significant improvements in the DASS scores.

After ONE twelve week POST OP rehabilitation program;

- 68% reduction in depression scores
- 59% reduction in anxiety scores
- 57% reduction in stress scores compared to the initial presentation
- 51% Increase in satisfaction with current health and wellbeing
- 40% improvement in satisfaction with body weight
- 53% increase in satisfaction with fitness levels
- 22% increase in satisfaction with sleep

SPECIFIC BENEFITS REPORTED AND OBSERVED

Psychosocial

Having access to an exercise physiologist or physiotherapist two to three times a week allowed clients to ask questions and eliminate concerns they may have had around surgery or their long term quality of life.



The most common questions and concerns clients had;

When is the best time to have surgery? Do I need surgery? How much better will I be after surgery? Do I need to do prehab? If so, for how long and what sort? Do I need to do rehab? If so, how long for and what sort? When is the right time to have my surgery? These questions allowed clients to 'normalise'.

Psychological

Statistically significant improvements in DASS outcomes as well as mental health related perceived health outcomes.



Cardiorespiratory

Arm Crank and cardio devices that did not generate joint pain were used throughout the program generating positive increases in perceived fitness levels and a 36% Increase in perceived body weight.



Pathology specific symptoms

LEFS outcomes improved in the initial prehab an subsequent prehab programs. The significant post-operative LEFS improvements where of greatest note.



CONCLUSIONS

For all good surgeons who are in demand, developing team care arrangements with stepped care interventions generates higher healthcare value outcomes, making operational and economic sense. Structuring a practice to increase the healthcare value of client's outcomes by including prehabilitation for 12-24 weeks improves surgical mental and physical readiness and short and long term surgical outcomes. The unique observation of mental health parameters as part of this study has generated valuable mental and physical readiness information for clients, surgeons, and GPs alike.

In Australia 60% of TKR patients have a BMI of >30. Medical directors at public and private hospitals have an opportunity to better manage theatre availabilities, decrease surgical risks, improve physical health outcomes and reduce the anxiety of clients who engage in a 12 week exercise medicine prehab program while a 24 week exercise medicine program will ensure both mental and physical statistically significant health improvements.

Post op rehab 12 week programs when combined with 12 week prehab programs overwhelmingly generate the greatest mental and physical outcomes.

- (1) <https://bmcmusculoskeletdisord.biomedcentral.com/articles/10.1186/s12891-019-2411-9>; (2) [https://www.oarsijournal.com/article/S1063-4584\(18\)31221-4/fulltext#YW9yj_F7eCY.linkedIn](https://www.oarsijournal.com/article/S1063-4584(18)31221-4/fulltext#YW9yj_F7eCY.linkedIn); (3) <https://www.csiro.au/en/research/technology-space/data/tkr-rehab-app>; (4) <https://www.bmj.com/content/bmj/371/bmj.m3576.full.pdf>; (5) <https://www.linkedin.com/pulse/three-keys-success-value-based-care-independent-pysell-dhra-pa-c/?trackingId=WEBIehUC8yPNlqOKg57%2BSw%3D%3D>; (6) <https://www1.racgp.org.au/ajgp/2020/september/changes-to-rehabilitation-after-total-knee-replace>; (7) <https://www.nejm.org/doi/pdf/10.1056/NEJMoa1505467#XhKrB6Alba0.linkedIn>; (8) [https://www.oarsijournal.com/article/S1063-4584\(18\)31221-4/fulltext#YW9yj_F7eCY.linkedIn](https://www.oarsijournal.com/article/S1063-4584(18)31221-4/fulltext#YW9yj_F7eCY.linkedIn); (9) <https://ww2.health.wa.gov.au/Reports-and-publications/Elective-Surgery-Wait-List-ESWL-reports/Elective-Surgery-Monthly-Report>; (10) <https://ww2.health.wa.gov.au/Reports-and-publications/Emergency-Department-activity/Emergency-Department-Monthly-Report>; (11) <https://link.springer.com/article/10.1007/s00264-020-04607-9>; (12) <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6267049/>