

# LATEST REAL WORLD FINDINGS FROM CHRONIC CARE AUSTRALIA

## THE MENTAL & PHYSICAL BENEFITS OF A TWELVE-WEEK EXERCISE MEDICINE PROGRAM USED AS PRE-OPERATIVE PREHABILITATION & POST-OPERATIVE REHABILITATION.

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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. This real world observational study was done 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;

- ✦ The implementation of an enhanced recovery after surgery (ERAS) program for hip and knee replacement surgery allows for early discharge and a quick return to independence in daily living. (13)
- ✦ Despite patients receiving an in-hospital physiotherapy program of some description, the optimum type of Total Knee Replacement (TKR) exercise intervention in the early postoperative phase remains unknown. (5)
- ✦ Two out of three patients with moderate to severe knee osteoarthritis (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 positive history of mental health issues is linked to dissatisfaction post-surgery. (9)
- ✦ Length of hospital stay in Australia after THR/TKR are declining from 7.1 days in 2009 to 5.4 days in 2016 (13) due to an increase in perioperative care. (14)

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 - 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™ perioperative management system.

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

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

26% engaged in face to face 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 exercise 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 (DASS)
- ✦ Lower Extremity Functional Scale (LEFS)
- ✦ Perceived Health Assessment
- ✦ Menopause Related Quality of Life Scale in female clients 40-60yrs

As part of their perioperative care 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 working with the client's GP and primary referrer at every four week review.

### OF THE 100 REFERRED CLIENTS;



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



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## RESULTS

### OF THE 100 REFERRED CLIENTS 60% HAD NOT REQUIRED SURGERY WITHIN THE 12 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 around 60. Interestingly the client cohort reflected the Australian Institute of Health and Welfare published statistics relating to co and multi-morbidity's with 50% of the clients having secondary chronic conditions including cardiac related secondary pathologies, chronic metabolic conditions and diagnosed psychological conditions.

*After ONE 12-week PREHAB exercise medicine program the following client perceived health outcomes where reported;*

- 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 were sufficient to sustain compliance and adherence.

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

*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 4 point MEDEX™ perioperative model of care helps to remove the objections to exercise by improving the clients understanding of their functional capacity safely. This allowed them to engage in more daily living activities with mental and physical confidence.

#### Psychological

Statistically significant improvements in DASS outcomes as well as mental health related perceived health outcomes. Pre operatively, DASS scores were maintained and slightly improved. Perceived health improved significantly from 12-24 weeks. Post op mental health significantly improved 12-24 weeks where function and perceived health plateaued.



#### 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 53% increase in perceived body weight after 24 weeks of prehabilitation.



#### Pathology specific symptoms

There was continuous improvement in joint specific function from 0-24.



### IMPLICATIONS FOR PRACTICE & FUTURE RESEARCH

Developing perioperative care with stepped care allied health interventions generates high healthcare value outcomes. Treating the mental and physical health of clients as part of the prehabilitation plan improves perceived health. There is an increase in the collective healthcare value of client's outcomes with prehabilitation for 12-24 weeks. This improves surgical mental and physical readiness as well as surgical outcomes. The unique observation of mental health parameters as part of this study has generated valuable mental and physical surgical readiness information for clients, surgeons, and GPs alike.

In Australia, 60% of TKR clients have a BMI >30. Medical directors at public and private hospitals have been looking for opportunities to improve theatre availabilities, decrease surgical risks and improve the physical health outcomes of surgical clients. The 4 Point MEDEX™ 12 week exercise medicine prehab program appears to support these objectives while improving the overall value-based health outcomes for clients with a single primary OA morbidity. A 24 week exercise medicine prehab program for those with co or multi morbidities will ensure significant health improvements both mentally and physically.

Post op rehab 12 week programs when combined with 12 or 24 week (depending on number of morbidities) prehab programs overwhelmingly generates the greatest mental and physical health outcomes and therefore generate the greatest healthcare value outcomes for the clients.

*For further details, graphs and the complete reference list, head to the Rehabilitation Hub at [chroniccare.com.au](http://chroniccare.com.au).*