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Effectiveness of an anti-inflammatory diet versus low-fat diet for knee osteoarthritis: the FEAST randomised controlled trial protocol

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ABSTRACT

Introduction Chronic inflammation plays a key role in knee osteoarthritis pathophysiology and increases risk of comorbidities, yet most interventions do not typically target inflammation. Our study will investigate if an anti-inflammatory dietary programme is superior to a standard care low-fat dietary programme for improving knee pain, function and quality-of-life in people with knee osteoarthritis.

Methods and analysis The eFEct of an Anti-inflammatory diet for knee oSTeoarthritis study is a parallel-group, assessor-blinded, superiority randomised controlled trial. Following baseline assessment, 144 participants aged 45–85 years with symptomatic knee osteoarthritis will be randomly allocated to one of two treatment groups (1:1 ratio). Participants randomised to the anti-inflammatory dietary programme will receive six dietary consultations over 12 weeks (two in-person and four phone/videoconference) and additional educational and behaviour change resources. The consultations and resources emphasise nutrient-dense minimally processed anti-inflammatory foods and discourage proinflammatory processed foods. Participants randomised to the standard care low-fat dietary programme will receive three dietary consultations over 12 weeks (two in-person and one phone/videoconference) consisting of healthy eating advice and education based on the Australian Dietary Guidelines, reflecting usual care in Australia. Adherence will be assessed with 3-day food diaries. Outcomes are assessed at 12 weeks and 6 months. The primary outcome will be change from baseline to 12 weeks in the mean score on four Knee injury and Osteoarthritis Outcome Score ($KOOS_4$) subscales: knee pain, symptoms, function in daily activities and knee-related quality of life. Secondary outcomes include change in individual KOOS subscale scores, patient-perceived improvement, health-related quality of life, body mass and composition using dual-energy X-ray absorptiometry, inflammatory (high-sensitivity C reactive protein, interleukins, tumour necrosis factor-α) and metabolic blood biomarkers (glucose, glycated haemoglobin (HbA1c), insulin, liver function, lipids), lower-limb function and physical activity.

Ethics and dissemination The study has received ethics approval from La Trobe University Human Ethics Committee. Results will be presented in peer-reviewed journals and at international conferences.

STRENGTHS AND LIMITATIONS OF THIS STUDY

⇒ The anti-inflammatory dietary programme was codeveloped and piloted with patients and clinicians, with the comparison low-fat dietary programme representing usual care.
⇒ Sufficiently powered trial evaluating change from baseline to 12 weeks (primary endpoint) and 6 months facilitating longer-term effectiveness evaluation of the anti-inflammatory dietary programme.
⇒ This trial will evaluate both self-reported and objective outcomes to understand potential mechanisms of symptomatic changes.
⇒ While outcome assessors are blinded to group allocation, the health professionals delivering the interventions and participants are unable to be blinded to group allocation due to the type of interventions.

Trial registration number ACTRN12622000440729.

INTRODUCTION

Osteoarthritis (OA) is the most common rheumatic disease affecting approximately 15% of the population, with OA of the knee being most prevalent.[1 2] Knee OA and its associated symptoms can be disabling and lead to substantial societal and healthcare costs.[3] In Australia alone, annual OA-related healthcare expenditure exceeds $AUD2.1 billion.[4] Although the main symptom of knee OA is pain, individuals with knee OA have an increased risk of other chronic diseases, including cardiovascular disease and diabetes.[5] As many as two-thirds of older adults with knee OA have more than one comorbidity.[6]

Clinical guidelines for knee OA recommend exercise therapy and weight loss as first-line management strategies due to their excellent safety profile and therapeutic effects similar to commonly used analgesics.[3 7] However,

the effectiveness of exercise therapy has recently been questioned due to its lack of benefit over an open-label placebo,[8] and findings that one-third of people completing an exercise programme do not achieve a clinically meaningful improvement in pain.[9 10] Weight loss programmes in those who are overweight or obese typically consist of caloric-restrictive diets, which are challenging to adhere to and sustain.[11] A meta-analysis highlighted that, within 2 years of a calorie-restrictive programme, over half of initial weight lost was regained, and by 5 years, this figure jumped to >80%.[12]

Anti-inflammatory diets provide an alternative to calorie-restrictive approaches by targeting local and systemic inflammation, both contributors to OA disease onset, progression and symptom burden.[13–15] Anti-inflammatory diets are typically high in minimally processed, nutrient rich foods such as fruit, vegetables, spices and extra virgin olive oil, which are dense in nutrients such as polyphenols, carotenoids, fibre, monounsaturated and polyunsaturated fatty acids.[16–19] These nutrients can significantly reduce inflammation even in the absence of weight loss[20] via antioxidant and anti-inflammatory properties by neutralising free radicals and associated cell damage, as well as improved lipid profiles.[16 17 21] Omega-3 fatty acids, abundant in nuts, seeds and fish, are also a key part of anti-inflammatory dietary approaches and help to achieve a more desirable omega-6 to omega-3 ratio.[22] In contrast, omega-6 fatty acids can be converted into arachidonic acid, a precursor for proinflammatory eicosanoids.[23] An elevated omega-6:omega-3 ratio exacerbates oxidative stress, which increases the risk and severity of chronic disease, including OA.[15] Due to their focus on real foods and consumption to satiety, anti-inflammatory diets are likely more sustainable than traditional calorie-restrictive approaches.[17]

Anti-inflammatory diets have garnered much interest in recent years due to their effectiveness in alleviating symptoms and improving biomarkers for a variety of chronic diseases, including diabetes,[18] cardiovascular disease,[24] epilepsy[25] and rheumatoid arthritis.[26] Small studies investigating anti-inflammatory diets for knee OA have demonstrated feasibility and effectiveness in reducing symptoms and inflammation over 12–16 weeks.[15 27 28] To date, no fully powered randomised controlled trial (RCT) has evaluated the effectiveness of an anti-inflammatory diet in knee OA.

The primary aim of this RCT is to estimate the average effect of an anti-inflammatory dietary programme compared with a standard care low-fat dietary programme on knee-related pain, function and quality of life in individuals with knee OA. We hypothesise that the anti-inflammatory dietary programme will result in greater improvements in knee-related pain, function and quality of life after 12 weeks (primary endpoint) and 6 months (secondary endpoint) compared with the standard care low-fat dietary programme. Secondary aims are to assess 12-week and 6-month effectiveness of the anti-inflammatory dietary programme on (1) self-reported global rating of change and achievement of acceptable symptoms; (2) health-related quality of life; (3) body mass and composition using dual-energy X-ray absorptiometry (DXA) and (4) inflammatory and metabolic blood biomarkers, global lower-limb function and physical activity.

METHODS AND ANALYSIS

Study design

This protocol describes a pragmatic, two-arm, parallel-group assessor-blinded superiority RCT and will be reported according to the Standard Protocol Items: Recommendations for Interventional Trials statement.[29] Reporting of the completed RCT will conform to the Consolidated Standards of Reporting Trials statement.[30] The FEAST (eFEct of an Anti-inflammatory diet for knee oSTeoarthritis) trial will be conducted at a single site (La Trobe University) in Melbourne, Australia with the first participant randomised on 31 August 2022 and the final participant anticipated to be randomised in June 2024. The primary endpoint will be at 12 weeks, with additional follow-up at 6 months (further longer-term follow-up dependent on funding). The study was prospectively registered on the Australian and New Zealand Clinical Trial Registry (ACTRN 12622000440729).

Patient and public involvement

Participants and clinicians codesigned the anti-inflammatory intervention, research questions and study methods. This input was gained from (1) qualitative interviews with participants from the pilot study as part of formal process evaluation strategies[28]; (2) participant and clinician focus groups providing feedback on study recruitment material and participant handbooks and (3) discussion with experienced clinicians managing knee OA and dietary intervention strategies as part of FEAST development. Patients and clinicians will provide input into the dissemination of study results by assisting with the decision on what information to share and in what format.

Participants

144 adults 45–85 years old with chronic knee pain consistent with a clinical OA diagnosis using criteria from the National Institute for Health and Care Excellence, which does not require radiographic evidence,[31] will be enrolled (table 1).

Recruitment and screening procedure

Trial flow is outlined in figure 1. Participants will be recruited from our network of collaborating orthopaedic surgeons in Victoria, Australia. Consistent with our prior work in other musculoskeletal conditions,[32 33] potentially eligible participants (ie, individuals aged 45–85 years with a history of knee pain for which medical care was sought) will be sent a study information letter inviting them to contact the research team. Additional recruitment

Table 1 Eligibility criteria

Inclusion criteria	Exclusion criteria
Fulfil National Institute for Health and Care Excellence[31] clinical criteria for osteoarthritis: ► Activity-related joint pain with average knee pain severity ≥4 on 11-point Numeric Rating Scale (NRS, where 0=no pain, 10=worst pain possible) in the past week. ► No morning stiffness or morning stiffness ≤30 min. ► Age ≥45 years.	Another reason than OA for knee symptoms (eg, tumour, fibromyalgia)
Age ≤85 years—due to potential safety reasons and additional comorbidities that may hinder capacity for dietary adherence	Planning to have knee surgery in next 6 months
History of knee pain on most days of the past month	Already strictly following an anti-inflammatory diet (eg, low carbohydrate, paleo, Mediterranean)
History of knee pain for at least 3 months	Following a habitual diet that excludes animal products (eg, vegan)
Be willing and able to attend 3–4 phone consults and 12-week and 6-month follow-up assessments	Unable to follow anti-inflammatory diet (eg, medically contraindicated, history of food allergy/hypersensitivity, family reasons)
Able to understand written and spoken English and to give informed consent	Taking the following diabetic medication that affects blood sugar levels (ie, insulin, SGLT 2 inhibitors, sulfonylureas) to mitigate the risk of hypoglycaemia/ketoacidosis
	Contraindications for DXA scans (eg, pregnant, breast feeding, planning pregnancy in next 6 months, >200 kg body weight)
	>5 kg weight fluctuation in past 3 months (ie, unstable weight)
	Unable to understand written and spoken English
	Knee injection, injury or surgery in the past 3 months
	A diagnosed psychiatric disorder (excluding anxiety and depression)
	History of eating disorder or bariatric surgery
	Had all eligible knee joints replaced by arthroplasty

DXA, dual-energy X-ray absorptiometry; OA, osteoarthritis; SGLT, sodium glucose co-transporter.

strategies will include advertisements in local newspapers, community/university magazines/posters, community market stalls and social media.

Potential participants will be screened for eligibility via telephone. Once eligibility is confirmed, participants will attend a study orientation session via videoconference to explain further study details (eg, fasting requirements) and be orientated to the dietary assessment tool (3-day food diary). If both knees meet the inclusion criteria, the most symptomatic knee will be considered as the index knee.

Randomisation procedure, concealment of allocation and blinding

On completion of baseline assessment, participants will be randomised to either the anti-inflammatory dietary programme or standard care low-fat dietary programme. Study treatments, but not study hypotheses, will be revealed to participants. A computer-generated randomisation schedule has been developed a priori by an independent statistician in random permuted blocks of 4–8 and stratified by sex and body mass index (≥30 kg/m^2 vs <30 kg/m^2). To ensure concealed allocation, the randomisation schedule will be stored electronically in the secure Research Electronic Data Capture (REDCap) system and only accessible to an unblinded researcher once baseline measures have been obtained, who will communicate treatment allocation to the participant. Investigators conducting the follow-up assessments will be blinded to group allocation. As the primary outcome is self-reported, participants are considered assessors; therefore, they will be blinded to previous scores. The health professionals delivering the interventions will deliver the intervention for both groups. Specific protocols for both interventions (including consultation contents and format, and accompanying resources) have been developed, and the health professionals have received training to ensure equal credibility. Random observations of intervention delivery will be conducted by the principal investigators to ensure treatment delivery credibility and fidelity.

An independent statistician, blinded to group allocation, will perform the primary RCT analysis.

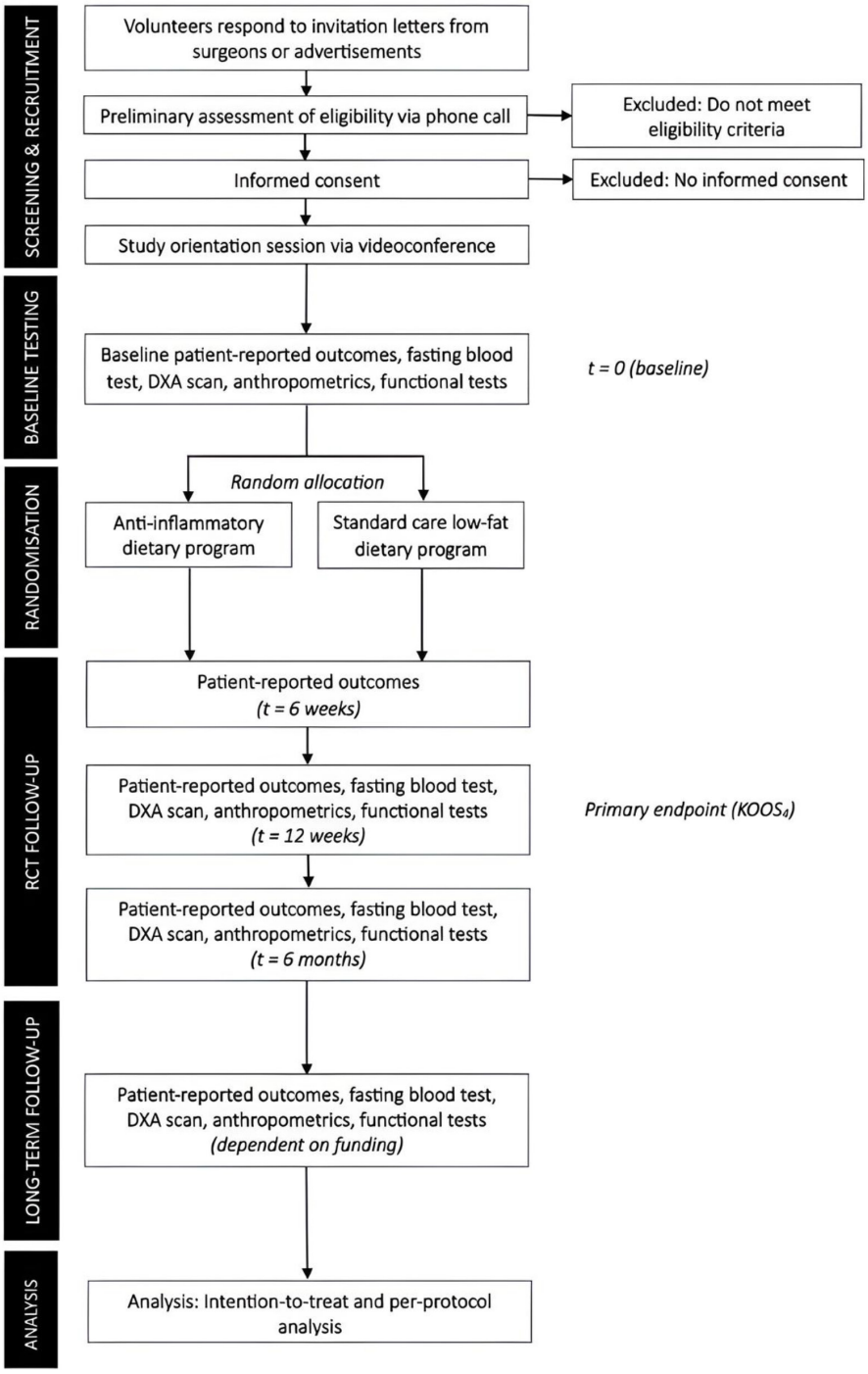

Figure 1 Flow of participants through the trial. DXA, dual X-ray absorptiometry; KOOS, Knee injury and Osteoarthritis Outcome Score. Optional qualitative interview for process evaluation at 6 months.

Interventions

The anti-inflammatory dietary programme and standard care low-fat dietary programme are summarised aligning to Template for Intervention Description and Replication guidelines[34] (table 2). Participants in both intervention groups were not actively discouraged to lose weight, but weight loss was described as a potential outcome of the interventions. The same health professionals will deliver the intervention for both groups.

Anti-inflammatory dietary programme

Participants allocated to the anti-inflammatory dietary programme will receive specific anti-inflammatory dietary education and an individualised eating plan, as well as a suite of resources to support behaviour change. The anti-inflammatory dietary programme will be delivered over 12 weeks by a qualified dietitian or by another health professional specially trained to deliver the intervention (eg, physiotherapist).

Table 2 Overview of intervention delivery described according to the TIDieR guidelines

Brief name	Anti-inflammatory dietary programme	Standard care low-fat dietary programme
WHY	Anti-inflammatory diets targeting systemic inflammation assist in the prevention and management of various chronic diseases.[16] Small pilot studies have shown a positive effect of anti-inflammatory diets to improve knee-related symptoms in people with knee osteoarthritis.[28]	Healthy eating guidelines and dietary advice described in the standard care programme booklet was based on Australian Dietary Guidelines (ADGs).[37 68] 2–3 dietetic consultations represent usual care for patients referred for dietary management in Australia.[37 38]
WHAT (MATERIALS)	Participants receive an intervention handbook containing all study details, key anti-inflammatory eating principles, example meal plans, traffic light system of foods encouraged and discouraged, and education (eg, common myths, tips for eating out, shopping tips); complimentary access to the Defeat Diabetes programme app/website; complimentary links to three movies; and a complimentary copy of the book 'A Fat Lot of Good'.[35]	Participants receive an educational handbook emphasising ADGs healthy eating principles and are provided links to the online resources from the Eat for Health website (https://www.eatforhealth.gov.au/).
WHAT (PROCEDURES)	Six consultations providing individualised guidance and support to follow an anti-inflammatory eating pattern, emphasising the consumption of fruits, non-starchy vegetables, fish, poultry, red meat, eggs, full-fat dairy, nuts, seeds and extra virgin olive oil. Participants will be encouraged to avoid highly processed foods, refined carbohydrates, added sugar and processed meats.	Three consultations providing general advice and education regarding healthy eating based on the ADGs. The principles focus on consumption of foods from the five food groups, while limiting intake of foods containing saturated fat, added salt, added sugars and alcohol.
WHO PROVIDED	A qualified dietitian or health professional specially trained to deliver all components.	A qualified dietitian or health professional specially trained to deliver all components.
HOW	Delivered with individual support for 12 weeks, after which, participants will be encouraged to sustain the anti-inflammatory diet unsupported up to 6 months. Consultations are one to one.	Delivered with standard healthy eating advice for 12 weeks, after which, participants will be encouraged to sustain the programme unsupported up to 6 months. Consultations are one to one.
WHERE	In-person consultations will occur at La Trobe University Nutrition and Dietetics research laboratory. Additional consultations will occur via telephone/videoconference (eg, Zoom). Participants will integrate the diet principles into their daily consumption of foods and beverages.	In-person consultations will occur at the La Trobe University Nutrition and Dietetics research laboratory. Additional consultations will occur via telephone/videoconference (eg, Zoom). Participants will integrate the diet principles into their daily consumption of foods and beverages.
WHEN AND HOW MUCH	Two in-person consultations at baseline (~45 min) and week 12 (~30 min) Four phone/videoconference follow-up consultations (~30 min) in weeks 2, 4, 6 and 9. Total active intervention delivery time: ~3.5 hours Participants are provided with self-management resources to optimise adherence to the anti-inflammatory diet up to the 6-month follow-up.	Two in-person consultations at baseline (~45 min) and week 12 (~30 min) One phone/videoconference follow-up consultation (30 min) in week 6. Total active control delivery time: ~1.5 hours Participants encouraged to sustain their diet up to 6 month follow-up.
TAILORING	Individualised anti-inflammatory dietary advice, education and support aligning with participant preferences and goals.	Advice based on the ADGs.
MODIFICATIONS	Any modifications will be reported.	
HOW WELL (planned)	2–3 professionals (qualified dietitian and other health professional) receive prior training in how to deliver and supervise the programme. Fidelity is assessed through random auditing by members of the principal investigator team (AGC or BLD). Participant adherence to the anti-inflammatory diet is assessed through consultation attendance, regular 3-day food diaries and self-report.	2–3 professionals (qualified dietitian and health professional) receive prior training in how to deliver and supervise the programme. Fidelity is assessed through random auditing by members of the principal investigator team (AGC or BLD). Participant adherence to the standard care low-fat diet is assessed through consultation attendance, regular 3-day food diaries and self-report.
HOW WELL (actual)	This will be reported in the primary paper.	

TIDieR, Template for Intervention Description and Replication.;

Participants will be encouraged to follow a diet containing minimally processed foods and vegetable oils, and higher amounts of healthy fats and nutrient-dense wholefoods known to fight inflammation (eg, fresh fruits low in natural sugar such as berries, non-starchy vegetables, nuts and seeds, seafood, poultry, red meat, eggs, full-fat dairy). Healthy fats include monounsaturated and polyunsaturated fats with optimal omega-3: omega-6 ratios as found in seafood, nuts and extra virgin olive oil. Participants will be advised to limit processed foods, refined carbohydrates (eg, pasta, bread, rice), confectionary and foods with added sugar. Participants will be encouraged to consume a normocaloric diet and to eat to satiety, with no specific percentage of total energy intake targets for carbohydrate, fat or protein.

An initial in-person consultation (~45 min) will occur immediately following group allocation to constructively review participant's current dietary intake (using baseline 3-day food diary) and develop an individualised meal plan. Participants will be provided with a comprehensive explanation of anti-inflammatory dietary principles, its rationale (eg, the role of inflammation in OA, link between foods and inflammation) and its potential benefits and side effects, and address questions and/or concerns. The following educational and behaviour change resources will also be provided at the initial consultation to support adherence: (1) bespoke information booklet providing anti-inflammatory eating information, example meal plans and foods that are encouraged and foods to avoid (online supplemental files 1 and 2); (2) complimentary subscription to an anti-inflammatory programme (Defeat Diabetes phone app/website), providing anti-inflammatory recipes, masterclasses, meal plans and educational articles; (3) complimentary links to recommended documentaries exploring the benefits of anti-inflammatory nutrition (ie, Fat Fiction, Cereal Killers, That Sugar Film) and (4) complimentary copy of a book exploring benefits of anti-inflammatory approach (A Fat Lot of Good[35]).

Follow-up phone/videoconference consultations (~30 min) will be scheduled in weeks 2, 4, 6 and 9, with timing to be negotiated between each participant and the health professional delivering the intervention. A final in-person consultation will be delivered immediately following the completion of the 12-week assessment. These follow-up consultations will provide participants with ongoing support, education and accountability. A 3-day food diary, completed prior to each consultation (see outcomes/adherence section), will guide individualised feedback and support to adapt meal plans to optimise adherence.

Standard care low-fat dietary programme

Participants allocated to the standard care low-fat dietary programme will receive advice and education regarding healthy eating based on the Australian Dietary Guidelines.[36] These government-endorsed guidelines aim to optimise nutrition intake through adequate consumption of foods from the five core food groups (grains and cereals; fruit; vegetables and legumes; lean meats and poultry, fish, eggs and tofu; reduced fat diary or alternatives), while limiting intake of foods containing saturated fat, added salt, added sugars and alcohol. They are high-carbohydrate and low-fat focused—participants will be encouraged to include at least four serves of wholegrains daily (eg, brown rice, pasta, bread, quinoa, oats) and to choose low-fat protein and dairy foods where possible.

The programme will be delivered through individual consultations with the treating dietitian or other specially trained health professional—the first in-person consultation immediately following baseline assessment (~45 min), the second via phone/videoconference at 6 weeks (~30 min) and the third in-person at 12-week follow-up with timing individualised as required. Two to three consultations represent usual care for patients referred for dietary management in Australia through the current public healthcare (Medicare) rebate system.[37 38] During the initial in-person consultation, participants will be provided with a bespoke educational booklet and advice and education emphasising the Australian Dietary Guideline principles (https://www.eatforhealth.gov.au/guidelines) and informed of complementary and publicly available online resources from the Eat for Health website (https://www.eatforhealth.gov.au/).

The follow-up phone/videoconference consultation in week 6 and in-person follow-up in week 12 will provide participants with ongoing support, education and accountability. The 3-day food diary, completed prior to each consultation (see outcomes/adherence section), will guide feedback and support to adapt meal plans to optimise adherence. The treating health professionals delivering the two dietary programmes will be based centrally at La Trobe University and will be trained by the senior study dietitian (BLD) until deemed competent in intervention delivery.

Irrespective of group allocation, participants can continue usual medical care and consult with their treating health professionals as necessary (eg, general practitioner regarding medication changes).

Data collection procedure

Data will be collected at baseline and 6 weeks, 12 weeks and 6 months after randomisation, with 12 weeks the a priori primary endpoint as this coincides with completion of supported interventions (table 3). Where possible, data will be collected and managed using a secure web-based software platform (REDCap) hosted at La Trobe University,[39] which has equivalent measurement properties to paper-based completion.[40] This strategy was used in our pilot study[28] and other trials of musculoskeletal conditions.[41] Paper versions will also be available if preferred.

Table 3 Overview of data collection

Variable	Baseline	6 weeks	12 weeks	6 months
Participant characteristics				
Age	X			
Sex and gender	X			
Ethnicity	X			
Education level	X			
Health literacy (REALM)	X			
Employment status	X			
Smoking status	X			
Civil status, living situation	X			
Medical history, comorbidities	X			
Knee pain/injury/surgery history	X			
Objective clinical outcomes				
Height, weight, waist girth	X		X	X
30 s chair stand test	X		X	X
40 m walk test	X		X	X
Body composition (DXA)	X		X	X
Blood inflammatory and metabolic biomarkers	X		X	X
Blood pressure	X		X	X
Patient-reported Outcomes				
KOOS subscales	X	X	X	X
Global rating of change		X	X	X
Desire for knee surgery	X	X	X	X
Medication use	X	X	X	X
Knee pain (current and worst in past week)	X	X	X	X
EQ-5D-5L*	X	X	X	X
Patient acceptable symptom state	X	X	X	X
Brief Pain Inventory	X		X	X
International Physical Activity Questionnaire	X		X	X
Kessler Psychological Distress Scale (K10)	X		X	X
3-day food diaries†	X	X	X	X
Adverse events		X	X	X

*Assesses health-related quality of life across five dimensions of health (mobility, self-care, usual activities, pain/discomfort, anxiety/depression) and a Visual Analogue Scale (0–100) of current overall health status.
†3-day food diaries are also assessed prior to anti-inflammatory dietary programme consultations at 2, 4 and 9 weeks.
DXA, dual-energy X-ray absorptiometry; KOOS, Knee injury and Osteoarthritis Outcome Score; REALM, rapid estimate of adult literacy in medicine.

OUTCOMES

Baseline characteristics

Participant characteristics including age, sex, ethnicity, knee pain/surgery details, socioeconomic details (eg, education level, employment status, living status), medical history and health literacy (assessed with the Rapid Estimate of Adult Literacy in Medicine[42]) will be collected (table 3).

Primary outcome

The primary outcome is the change from baseline to 12 weeks in the mean score on four Knee injury and Osteoarthritis Outcome Score ($KOOS_4$) subscales covering knee pain, symptoms, function in daily activities and knee-related quality of life. The KOOS is a 42-item patient-reported outcome measure assessing five separately scored subscales: Pain, Symptoms, Function in Sport and Recreation (Sport/Rec), Activities of Daily Living (ADL) and Quality of Life. The $KOOS_4$ and all KOOS subscale scores range from 0 (extreme problems) to 100 (no problems). The KOOS is a valid, responsive and reliable questionnaire, with $KOOS_4$ a primary outcome for other knee OA trials.[33 43 44]

Secondary effectiveness outcomes

KOOS subscales

To allow for clinical in-depth interpretation, scores for the five KOOS subscales will be reported individually (ie, pain, symptoms, function in sports and recreational activities, ADL, quality of life).[10 44]

Global Rating of Change and patient-acceptable state

Self-perceived change in pain and function will be assessed using a 7-point Likert scale ranging from 'much worse' to 'much better' in response to the questions: 'Overall, how has your knee pain changed since the start of the study?' and 'Overall, how has your knee function changed since the start of the study?', respectively. Treatment success will be defined as a response of either 'better' or 'much better'. Satisfaction with current knee function using the self-reported Patient Acceptable Symptom State question.[45] Participants not satisfied with current knee function at follow-up assessments will be asked a second question to determine if they considered the treatment to have failed.[45]

Anthropometrics

Height and weight will be assessed using a seca 217 stadiometer and seca 703 EMR-validated column scale (Hammer Steindamm, Hamburg, Germany), respectively. Waist circumference will be measured using a metal tape measure (Lufkin W606PM ¼ inch×2 m Executive Thinline Pocket Tape).

Global lower-limb function

Two performance-based tests of lower-limb function recommended by the OA Research Society International will be conducted: the 30 s chair-stand test (number of chair-stands from a standardised height chair in 30 s) and 40 m walk test (time to walk 40 m safely, using walking aids if required).[46]

Body composition

A whole-body DXA scan will be acquired using a Hologic Horizon DXA scanner (Bedford, Massachusetts, UA) to assess adiposity (visceral, peripheral) and lean mass.[47]

Inflammatory and metabolic biomarkers

An array of blood inflammatory and metabolic biomarkers will be analysed from samples of blood collected, including high sensitivity C reactive protein, cytokines (IL-1β, IL-6, IL-8, IL-10, TNF-α), blood glucose, HbA1c, serum insulin, liver function tests (including albumin) and lipids (eg, high-density lipoprotein, triglycerides). Participants will be instructed to fast for at least 10 hours prior to blood collection and a single forearm venepuncture will take place to collect a total of ≤30 mL blood. Plasma and serum samples will be centrifuged (3000 ms, 10 min) and all samples (plasma, serum and whole blood) frozen at −80°C for later analysis (online supplemental file 3).

Secondary safety outcomes

Adverse events

Adverse events and serious adverse events will be recorded at 6-week, 12-week and 6-month follow-up via open probe questioning to optimise collection of sufficient detail. Under the Preferred Reporting Items for Systematic Reviews and Meta-Analyses harms statement, an adverse event is defined as any undesirable experience causing participants to seek medical treatment (eg, general practitioner).[48] A serious adverse event is defined as any undesirable event/illness/injury classified as having the potential to significantly compromise clinical outcome or result in significant disability or incapacity, those requiring inpatient or outpatient hospital care, to be life-threatening or result in death.

Exploratory outcomes

Dietary analysis

Participants will record food and beverage intake over 3 days via the smartphone application Australia Calorie Counter—Easy Diet Diary (Xyris Software) or on paper (personal preference). Easy Diet Diary is a commercial calorie counter and food diary that allows users to email recorded diaries to treating professionals. Once received by the treating health professional, the 3-day food diaries will be imported into and analysed using, Foodworks Premium Edition nutrient analysis software (V.10, Brisbane, Australia 2019) and Australian food composition databases. Paper-based 3-day food diaries will be manually entered into FoodWorks. Total energy intake, macronutrients, micronutrients and core food group analysis will be reported. Dietary analysis data will also be used to calculate the inflammatory potential of participants' diets (eg, Dietary Inflammatory Index).[49]

Quality of life

Health-related quality of life will be assessed with the EQ-5D-5L generic health index, which comprises five dimensions of health (mobility, self-care, usual activities, pain or discomfort, anxiety or depression) and a Visual Analogue Scale (VAS) of current overall health status.[50] Both validity and reliability has been demonstrated in arthritic populations.[51]

Knee pain and interference

Self-reported knee pain (current, worst over past week, average over past week) will be assessed using a 100 mm VAS (0=no pain, 100=worst pain imaginable). The degree to which knee pain interferes with participant's daily functioning will be assessed using the Brief Pain Inventory,[52] a tool with reliability and validity demonstrated in knee pain populations.[53 54]

Change in analgesic medication use

Change in analgesic medication use from baseline to 12-week and 6-month follow-up will be assessed with a 7-point Likert scale (much less to much more).

Physical activity

Physical activity will be assessed using the International Physical Activity Questionnaire (IPAQ),[55] a standardised and valid questionnaire providing an estimate of physical activity and sedentary behaviour, which has been widely validated.[55–57] Respondents are asked to report

time spent in physical activity across three intensities (walking, moderate, vigorous). Using the IPAQ scoring protocol,[58] total weekly physical activity can be estimated by weighting time spent in each activity intensity with its estimated metabolic equivalent energy expenditure.[59]

Blood pressure

A pair of seated blood pressure measurements will be obtained using an automated monitor (Omron Model HEM-7121). The blood pressure cuff is placed over the mid-upper arm with the participant seated.

Self-perceived wellness

Self-reported sleep quality, hunger, fatigue and energy levels will be assessed using a 100 mm VAS (0=worst outcome, 100=best outcome).

Intervention adherence

Adherence will be assessed by a self-reported VAS (0=not at all adherent, 100=extremely adherent) and 5-point Likert scale at 6 weeks, 12 weeks and 6 months and evaluation of 3-day food diaries by consulting health professionals. Satisfactory adherence is defined as a self-report of both ≥80 on the VAS and 'Most days' or 'Every day' on the Likert scale, at both the 6-week and 12-week time points.

DATA MANAGEMENT

Most outcome data will be collected and managed electronically via REDCap web-based software hosted at La Trobe University. Other data (eg, DXA reports) will be stored electronically on the La Trobe University secure research drive. All electronic data will be deidentified (participant code) and exported for data analysis and saved in a password-protected database on the La Trobe University research drive only accessible to the research team. Paper-based identifying documents (eg, consent forms) will be securely stored in a locked filing cabinet accessible only to members of the research team and separately from reidentifiable (ie, coded) data.

Due to the minimal known risks associated with the interventions being evaluated, our study will not have a formal data monitoring committee and will not require an interim analysis. This is the same approach we have taken with other low-risk RCTs.[41] Any unexpected serious adverse events or outcomes will be discussed by the trial management committee (authors of this protocol) and reported to the approving human research ethics committee for monitoring.

Sample size calculation

This trial has been powered to detect a clinically significant between-group difference for the primary outcome of $KOOS_4$. A recent RCT comparing an anti-inflammatory diet versus low-caloric diet in overweight women with knee OA observed an effect size (standardised mean difference) on self-reported pain and function of 1.0 (95% CI 0.5 to 1.6).[60] Given inherent differences in the FEAST RCT (eg, Australian Dietary Guideline control group, not specifically targeting overweight participants, inclusion of both women and men), we used the lower bound 95% CI to provide a conservative estimate of the anticipated effect size (0.5). This estimated effect size is also a conservative estimate based on our single-arm anti-inflammatory diet pilot trial, which had an effect size of 0.68.[28] Recruiting 128 participants (equally distributed between two arms) would yield 80% power to observe such an effect or larger at a two-tailed type I error of 0.05. This sample size estimation is also conservative since it is based on independent samples t-test. Using an Analysis of covariance (ANCOVA) model that includes the baseline value as a covariate and is prespecified for the analysis should provide higher power for the same sample size.[61] To account for a potential 10% drop-out, we will recruit 144 participants. This sample size will also be sufficient to detect a minimal important change in $KOOS_4$ estimated at 10 points in patients with knee OA (with a common between-subject SD of 15).[62]

Statistical analyses

Analysis will be performed according to the estimands framework[63] with a statistical analyst blinded to group allocation. All outcomes and analyses are prospectively categorised as primary, secondary or exploratory. For the primary hypothesis, a linear model with baseline value, sex and BMI (≥30 vs <30 kg/m^2) as covariates and treatment condition as a fixed factor will evaluate the treatment effect on the primary outcome of $KOOS_4$ (mean score of four of the five subscales of the KOOS) at 12 weeks. A linear mixed model utilising repeated measures at all time points for secondary hypotheses will allow non-biased estimates of treatment effect in the presence of any potential missing cases, providing data are missing at random. A sensitivity analysis using pattern-mixture model to investigate the deviation from the missingness-at-random assumption will be carried out.[64] For secondary binary outcomes (eg, treatment success), mixed-effect logistic regression models will be used to assess the effect of treatment. A subsequent analysis of participants classified as adherent to the protocol will be performed. Following publication of the primary trial results, we will also perform a formal mediation analysis to estimate direct and indirect (eg, through weight and inflammation change) effects.

Healthcare resource use

Healthcare resource utilisation (eg, hospitalisations, medical imaging, healthcare visits, medication use) will be assessed by participant self-report to estimate costs associated with the trial programmes (eg, hospital admissions, medication use, clinician visits, imaging tests, out-of-pocket expenses).

Process evaluation

Semistructured interviews will be conducted on a subset of consenting participants (until data saturation is reached)

at 6 months. Interviews will explore experiences, knowledge and understanding of interventions received including potential benefits; acceptability and perceived effectiveness of the intervention and reasons for adhering (or not) to the allocated diet. Purposive sampling will be used to recruit interview participants based on characteristics (anti-inflammatory dietary programme vs standard care low-fat dietary programme, men vs women) and outcomes of the trial (good outcome vs poor outcome). Interviews will be audio recorded, transcribed and analysed using framework analysis,[65] a flexible technique allowing researchers to identify, compare and contrast data according to inductively and deductively derived themes. Data will be coded and an inductive thematic analysis will be applied until no new themes emerge.

ETHICS AND DISSEMINATION

This study complies with the Declaration of Helsinki and has received approval from La Trobe University Human Ethics Committee (HEC-22044). Written informed consent will be obtained from participants prior to enrolment (online supplemental file 4). Anti-inflammatory diets are associated with minimal and transient adverse events, thus there are minimal safety considerations associated with this trial.

Study outcomes will be widely disseminated through a variety of sources. Results will be reported in peer-reviewed publications and presented at key national and international conferences. Only aggregate data will be reported. A lay summary report will be available for study participants. Any important protocol amendments will be reported to the approving ethics committee, registered at ANZCTR and communicated in the primary RCT paper. Any serious adverse events will be recorded and reported to the approving ethics committee.

Deidentified data will be made available on reasonable request to the principal investigator (AGC) after publication (except where the sharing of data is prevented by privacy, confidentiality, or other ethical matters, or other contractual or legal obligations) according to La Trobe University Research Data Management Policy.

DISCUSSION

The current RCT will be the first full-scale trial to evaluate the symptomatic, inflammatory, functional and body composition benefits of an anti-inflammatory dietary programme compared with a standard care low-fat dietary programme based on Australian Dietary Guidelines. While outcome assessors are blinded to group allocation, owing to the type of interventions (ie, dietary advice) blinding of participants will not be possible. We also acknowledge that, like most RCTs, there is a risk that our recruitment strategy may result in a selected sample not representative of the general population. However, using similar recruitment strategies, our prior RCTs have resulted in a representative sample of the culturally and sociodemographically diverse Australian population that has similar characteristics to other international cohorts with the index musculoskeletal condition.[66]

The evaluation of a non-pharmacological anti-inflammatory dietary programme to improve pain, symptoms and quality of life for individuals with OA could have important individual and socioeconomic benefits—decreased healthcare dollars spent on managing OA and reduced surgery waiting lists. Another benefit is that anti-inflammatory diets are also effective at combating metabolic syndrome, a key risk factor for chronic diseases, and thus the benefits from treating OA could stretch further to improving other medical comorbidities.[67] This fully powered RCT represents a crucial step towards the development of a sustainable and cost-effective therapy that can both supplement and complement existing treatment strategies to optimise OA outcomes.

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Contributors AGC, BLD, PB and JLK conceived the study and obtained funding. AGC, BLD, PB and JLK designed the study protocol with input from LL, JJH and ABM. ADL provided statistical expertise and will conduct primary statistical analysis. MH provided blood analysis expertise and will lead inflammatory and metabolic marker analyses. HGM and NPW assisted with participant recruitment from their clinical population with knee osteoarthritis. LL drafted the manuscript with input from AGC, JJH, BLD, PB, JLK, AA, MDH, ADL, ABM, HGM and NPW. All authors and read and approved the final manuscript.

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Competing interests PB is the founder of Defeat Diabetes and author of 'A Fat Lot of Good'. PB contributed to study design but has no role in study execution, data management, analysis or the decision to publish. The NHMRC has no role in study design and will not have any role in its execution, data management, analysis and interpretation or on the decision to submit the results for publication. JLK is an editor of the British Journal of Sports Medicine (British Medical Journal Group). AGC is an associate editor of British Journal of Sports Medicine (British Medical Journal Group). All other authors have no competing interests.

Patient and public involvement Patients and/or the public were involved in the design, or conduct, or reporting, or dissemination plans of this research. Refer to the Methods section for further details.

Patient consent for publication Not applicable.

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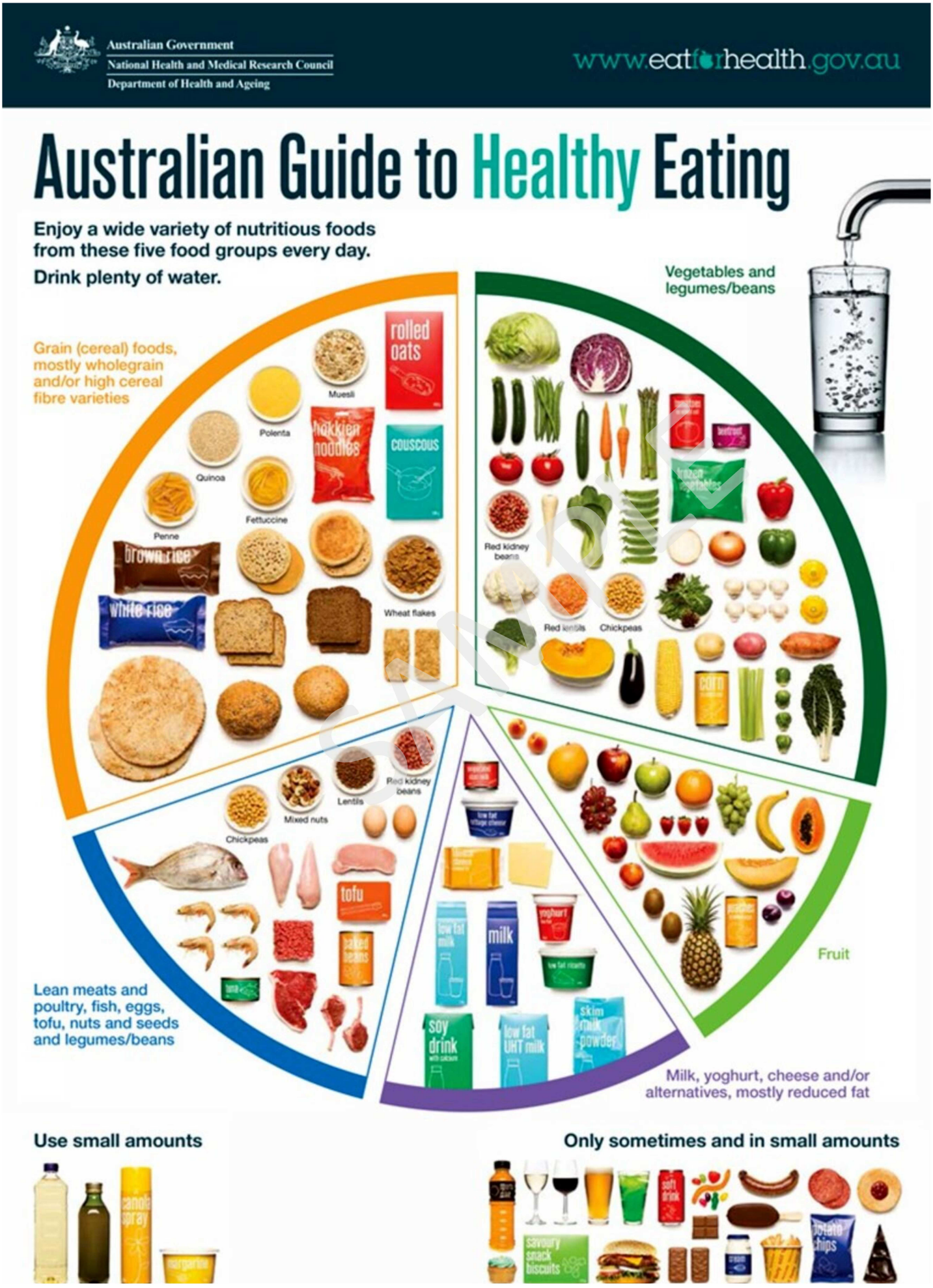
FEAST

SAMPLE FROM LOW-FAT PARTICIPANT BOOKLET


Australian Government
National Health and Medical Research Council
Department of Health and Ageing
www.eatforhealth.gov.au
Australian Guide to Healthy Eating
Enjoy a wide variety of nutritious foods from these five food groups every day.
Drink plenty of water.
Grain (cereal) foods, mostly wholegrain and/or high cereal fibre varieties
Vegetables and legumes/beans
Fruit
Lean meats and poultry, fish, eggs, tofu, nuts and seeds and legumes/beans
Milk, yoghurt, cheese and/or alternatives, mostly reduced fat
Use small amounts
Only sometimes and in small amounts

Vegetables and legumes

Vegetables, including legumes/beans are nutrient dense, low in kilojoules, and are a good source of minerals and vitamins (such as magnesium, vitamin C and folate), dietary fibre and a range of natural plant chemicals such as carotenoids. Legumes include chickpeas, kidney beans, and peas. **Aim for 5 serves a day.**

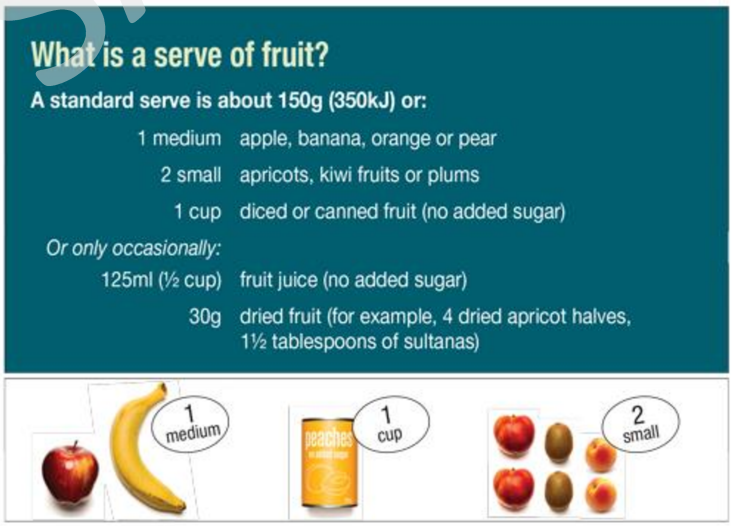
*With canned varieties, choose those with no added salt

Fruit

A wide variety of fruit is grown and available in Australia. Choosing fruits in season provides **better value and better quality**. And just like with veggies, choosing different coloured fruits increases the variety of nutrients, which can enhance your health! Aim for **two serves** of fruit a day.

Try eating fruits from these different fruit categories:

- citrus fruit such as oranges, mandarins, and grapefruit
- pome fruits such as apples and pears
- stone fruit such as apricots, cherries, peaches, nectarines, and plums
- tropical fruit such as bananas, papaya, mangoes, pineapple, and melons
- berries



- other fruits such as grapes and passionfruit

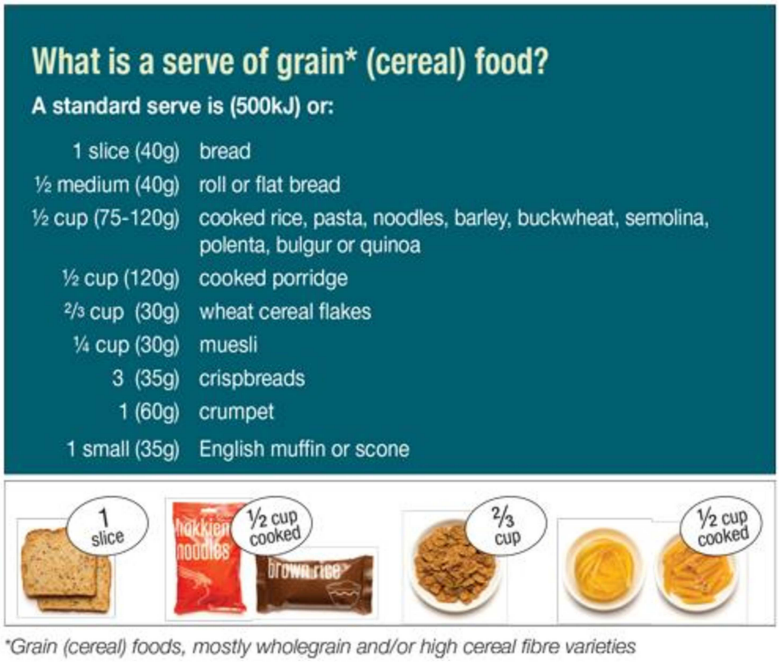
Enjoy more fruit by trying:

- chopped fruit to cereal, porridge, salad, or toast
- fruit as a convenient snack while out and about
- fruit-based desserts (baked apples, fruit crumbles, stewed/ poached fruit)
- adding fruit to pancakes, scones, pikelets, and low-fat muffins.

Wholegrains

All types of grains are good sources of complex carbohydrates and some key vitamins and minerals. Grain foods are mostly made from wheat, oats, rice, rye, barley, millet, quinoa and corn.

Wholegrains are naturally high in fibre, helping you feel full and satisfied — which makes it easier to maintain a healthy body weight. Nutritionally, wholegrain and wholemeal foods are very similar.



Aim for 4-6 serves of grain foods a day. Additional serves can be eaten depending on your activity level.

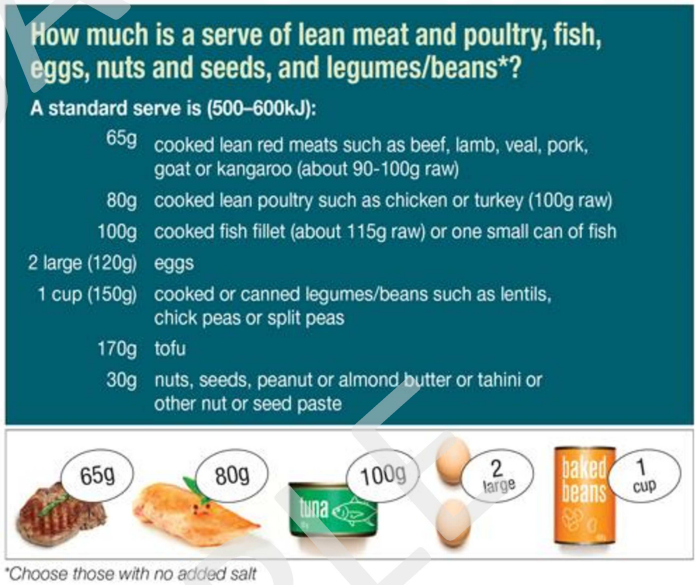
Enjoy more wholegrains by having:

- breakfasts that include whole-grain cereals, like oatmeal.
- wholemeal toast or wholemeal bagels for white-flour versions.
- low-fat muffins made with whole-grain flours.
- sandwiches using whole-grain breads or rolls.
- quinoa, brown rice, wild rice, barley or bulgur instead of white rice.
- wild rice or barley in soups, stews, casseroles and salads.
- rolled oats or crushed whole-wheat bran cereal in recipes instead of dry breadcrumbs.

Lean meat and poultry, fish, eggs, tofu, nuts and seeds

These are a critical part of having enough protein each day. They also provide other nutrients such as: iodine, iron, zinc, vitamins, especially B12, and essential fatty acids.

There's a lot to choose from:



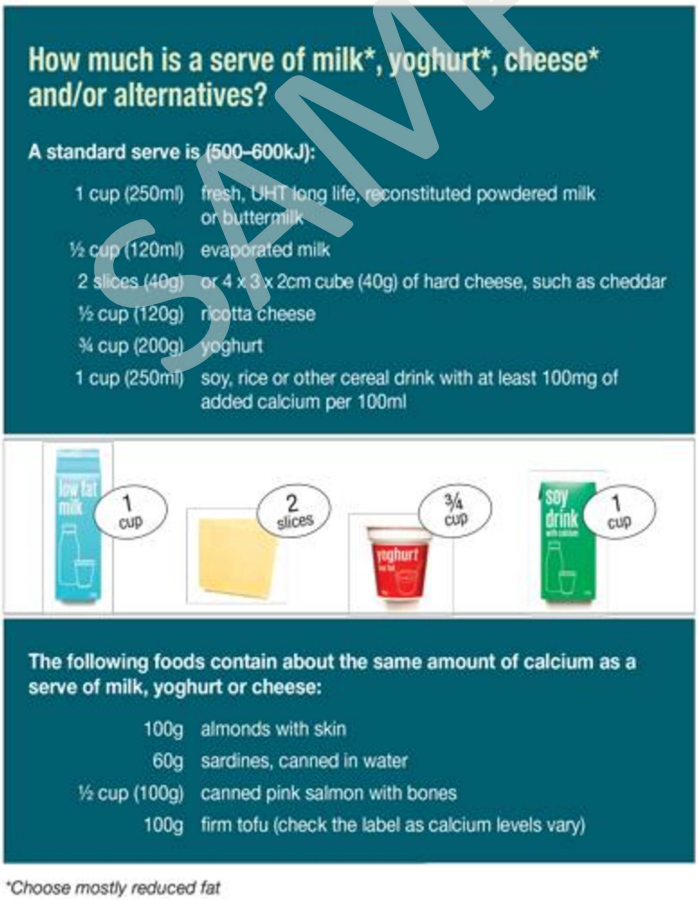
- Lean meats - Beef, lamb, veal, pork, kangaroo
- Poultry - Chicken, turkey, duck, emu, goose, bush birds
- Fish and seafood - Fish, prawns, crab, lobster, mussels, oysters, scallops, clams
- Eggs
- Nuts and seeds - Almonds, pine nuts, walnut, macadamia, hazelnut, cashew, peanut, nut spreads, and pumpkin seeds
- Legumes/beans - All beans, lentils, chickpeas, split peas, tofu.

Milk, yoghurt, cheese, and/or alternatives

Dairy products (and dairy alternatives) are rich in calcium, protein, and lots of nutrients. Dairy foods contribute to strong bones. Aim for **at least 2-3 serves daily.**

Examples of milk, yoghurt, cheese and/or alternatives include:

- Milks - All reduced fat or full cream milks, plain and flavoured, long life milks, fortified soy beverages
- Yoghurt - All yoghurts including reduced fat or full cream, plain and flavoured, soy yoghurt (calcium fortified)
- Cheese - All hard cheeses, reduced or full fat for example cheddar, Gouda, Swiss



*Choose mostly reduced fat

FEAST

SAMPLE OF ANTI-INFLAMMATORY PARTICIPANT BOOKLET

EXAMPLE WEEKLY MEAL PLANS

Here are examples of what a week might look like. Consider these plans as a guide to give you ideas, not something written in stone! Most of the recipes below can be found on the **Defeat Diabetes** app, or by simply searching on Google online.

Lots of other anti-inflammatory/low-carbohydrate ideas online at: https://www.eatthebutter.org/dinner-ideas/

Week 1

	Monday	**Tuesday**	**Wednesday**	**Thursday**	**Friday**	**Saturday**	**Sunday**
Breakfast	Raspberry chia pot	Yoghurt with berries	Raspberry chia pot	Coconut crunch granola	Berry yoghurt smoothie	Scrambled eggs with spinach and avocado	Zucchini and feta fritters
Snack	Apple with peanut butter	Hummus and veggies	Apple with peanut butter	Handful of almonds with piece of dark chocolate	Hummus and veggies	Apple with peanut butter	Handful of walnuts
Lunch	Roast vegetable salad	Salad with can of tuna	Leftover prawn pad thai	Leftover burrito bowl	Salad with can of tuna	Salmon with cauliflower rice bowl	One pan spiced halloumi and eggplant
Snack	Handful of almonds with piece of dark chocolate	Almond meal blueberry muffin	Zucchini and feta fritter	Almond meal blueberry muffin	Handful of almonds with piece of dark chocolate	Yoghurt with berries	Almond meal blueberry muffin
Dinner	Garlic prawns with zoodles	Beef pad thai	15-minute burrito bowl	Miso barramundi with vegetables	Swedish meatballs	Baked portobello mushrooms with feta	Grilled lamb chops with roasted vegetables

Week 2

	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
Breakfast	Coconut crunch granola	Berry smoothie	Scrambled eggs with spinach and avocado	Berry smoothie	Coconut crunch granola	Scrambled eggs with spinach and avocado	Shakshuka
Snack	Mini frittata	Pear	Apple with handful of almonds	Pear	Mini frittata	Handful of walnuts with piece of dark chocolate	Yoghurt with berries
Lunch	Salad with sliced steak	Easy Tuna Niçoise	Leftover stuffed capsicum	Leftover burger patty with salad	Leftover green curry with cauli rice	Caesar salad	Warm veggie salad with almonds
Snack	Slice of orange almond meal cake	Handful of walnuts with piece of dark chocolate	Mini frittata	Slice of orange almond meal cake	Apple with handful of almonds	Yoghurt with berries	Pear
Dinner	Salmon poke bowl	Stuffed capsicums	Smoky beef burger on mushroom buns	Green vegetable and prawn curry with cauli rice	Easy mushroom, lemon, and garlic chicken	Cauliflower pizza with pesto, sausage, and herbs	Grilled steak and roasted vegetables

Week 3

	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
Breakfast	Breakfast egg muffins	Berry yoghurt smoothie	Breakfast egg muffins	Chia pudding pot	Berry yoghurt smoothie	Bacon and eggs with roasted tomatoes	Mexican breakfast scramble
Snack	Chia pudding pot	Beef jerky	Greek yoghurt with berries	Breakfast egg muffins	Handful of almonds with cheese stick	Apple with peanut butter	Strawberry power balls
Lunch	Zucchini and walnut salad	Leftover beef burrito bowl	Leftover salmon patties with salad	Greek salad	Leftover tagine	Kale, broccoli and almond salad	Mushroom soup with crispy cheese croutons
Snack	Strawberry power balls	Handful of almonds with square of dark chocolate	Strawberry power balls	Handful of almonds with apple	Dark chocolate (avocado) mousse	Beef jerky	Dark chocolate (avocado) mousse
Dinner	15-minute beef burrito bowl	Salmon patties with feta sauce and beet salad	Chicken curry with cauliflower rice	Lamb and apricot tagine	Pan-seared barramundi with cauliflower mash	Zucchini lasagne	Grilled lamb chops with roasted vegetables

Week 4

	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
Breakfast	Coconut granola with milk	Blueberry almond protein smoothie	Vegetable cheese frittata	Blueberry almond protein smoothie	Coconut granola with milk	Tofu scramble	Almond flour pancakes

Snack	Roasted chickpeas	Slice of almond flour banana bread	Greek yoghurt with berries	Peanut butter balls	Beef jerky	Roasted chickpeas	Handful of walnuts
Lunch	Vegetable cheese frittata	Leftover roast vegetable salad with halloumi	Leftover broccoli and leek soup	Vegetable cheese frittata	Kale Caesar salad	Leftover stuffed capsicums	Creamy Tuscan soup
Snack	Slice of almond flour banana bread	Handful of almonds with dark chocolate	Roasted chickpeas	Slice of almond flour banana bread	Handful of almonds with dark chocolate	Greek yoghurt with berries	Peanut butter balls
Dinner	Roast vegetable salad with halloumi	Cheesy broccoli soup	Spicy tofu san choi bao	Vegetarian stuffed zucchini boats	Stuffed capsicums	Beetroot & halloumi salad with pomegranate	Spiced eggplant curry with cauliflower rice

FEAST v 2.0
17.08.2023

FEAST Project

Standard Operating Procedure

Blood collection, processing, handling, and storage procedures

1.1 Purpose

The purpose of the current SOP is to provide step-by-step instructions on the exact procedures that the research team needs to follow for conducting venous blood collection for biochemical analysis at baseline and follow-up examination.

1.2 General procedures for venous blood collection

Venous blood samples will be obtained from each participant for biochemical analysis following a 12-hour overnight fast, at baseline (T1), 12 weeks (T2) and 6 months (T3) (figure 1)

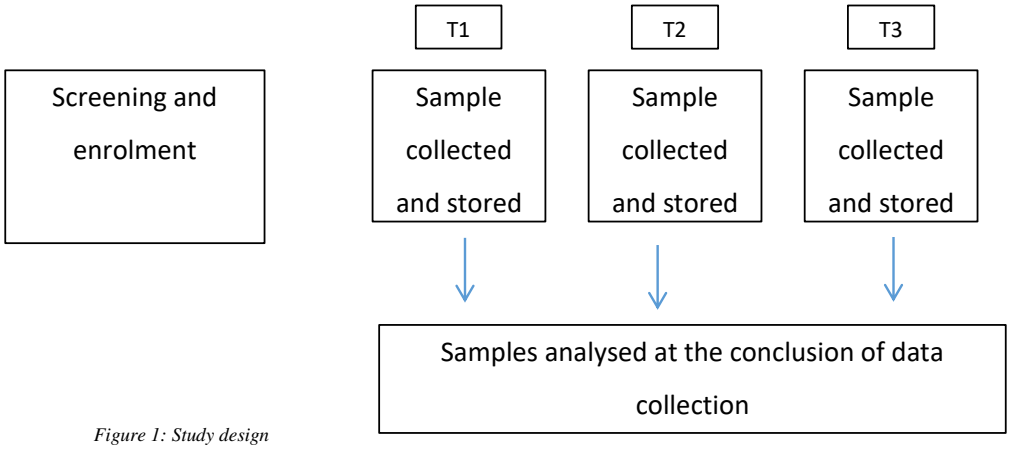


Figure 1: Study design

The researcher will perform venepuncture to obtain no more than 30mL of blood.

1.2.1 Consumables and supplies required for performing venepuncture

The consumables and supplies that will be used for performing the venepuncture in the study are the following:

- Disposable Latex gloves must be worn by the researcher and anyone else assisting with blood collection.
- Alcohol swab will be used to clean the venepuncture site.
- Winged steel needles appropriate for adults with an extension tube (a butterfly) will be used. The butterfly will have either a syringe or an evacuated tube with an adaptorSterile gauze pads will…..
- Adhesive hypo allergic bandages (plasters or Band-Aids) will be applied to the puncture site to minimize the risk of infection.
- Plastic Bag for Waste will be used to dispose all of the biohazardous waste generated as well as a sharps biocan to dispose of all needles.

1.2.2 Steps in obtaining venous blood from the participant

The steps for obtaining venous blood samples from the study participants are provided below:

Step 1: Complete general preparation.

- Find an indoor site to encourage privacy during blood collection. The site should have a table or other piece of furniture with a flat surface where you can lay out all consumables/ supplies. An examination bed should be readily available if the respondent feels faint and needs to lie down.
- Ensure that each subject has completed a 10-hour fast.

- Wash and dry hands, put on gloves before initiating blood collection from the participant.
- Take out a clean absorbent paper sheet and spread it over a flat surface to lay out consumable and supplies.

Step 2: Prepare the participant for the venepuncture.

- The individual should be seated comfortably in a chair with arm extended on the slanting armrest to form a straight line from the shoulder to the wrist. The arm and elbow should be supported firmly by the armrest and should not be bent at the elbow.
- Ask each volunteer if they have a history of fainting. If so, ensure that the blood sample is only drawn whilst the subject is lying down on a bed.
- Describe to the participant exactly what will be done during the collection of the blood sample.

Step 3: Prepare the venepuncture site.

- Apply (tighten) tourniquet.
- Ask the participant to close his/her hand so that the veins will become more prominent and thus easier to enter. Vigorous hand exercise or "pumping" should be avoided.
- Select the vein site. Palpate and trace the path of veins several times with the index finger. If superficial veins are not readily apparent, blood can be forced into the vein by gently massaging the arm from wrist to elbow. Several sharp taps at the vein site with index and second finger will cause the vein to dilate.
- Loosen tourniquet.
- The venepuncture site must be cleansed once with an alcohol swab to prevent any chemical or microbiologic contamination of either the patient or the specimen.
- Check equipment, tube selection and thread needle (or butterfly) securely onto tube holder (barrel).
- Re-apply the tourniquet and relocated vein position and direction. A tourniquet allows the veins to fill with blood, thus making the veins more prominent and easier to enter. Do not leave the tourniquet on for longer than 1 minute otherwise it may result in either hemoconcentration or variation in blood test values.
- Remove needle cover and check bevel is orientated uppermost.

Step 4: Blood drawing

- Puncture the skin 3–5 mm away from the vein; this allows good access without pushing the vein away.
- If the needle enters alongside the vein rather than into it, withdraw the needle slightly without removing it completely, and angle it into the vessel.
- Insert the tube into the holder and commence filling the tubes.
- Draw blood slowly and steadily.
- Release the tourniquet as soon as blood flow is established. Tourniquet release allows the blood circulation to return to normal and also reduces bleeding at the venipuncture site.
- Remove the tube from the holder and invert (8-10 times) to mix the blood with tube additives. Place blood samples on ice if required..
- Place a cotton wool above the venepuncture site, withdraw the needle and apply pressure.
- Dispose of needle in a sharps container.
- Check site and apply an adhesive bandage.
- Label all tubes immediately.

1.3 Blood processing and handling

1.3.1 Centrifuge procedure

Collected venous blood will be centrifuged and the extracted plasma and/or serum will be pipetted into aliquots according to the blood collection protocol.

- Set up in a well-ventilated environment, on a horizontally levelled and rigid surface with adequate load-bearing capacity.
- As safety zone maintain a clear radius of at least 30 cm around the centrifuge. Do not place any dangerous substances within this security zone.
- Open the centrifuge door by pressing the open button.
- Place the remaining tubes containing blood into appropriate sized adapters.
- Place the tubes containing water in opposite adapters, where they should mirror the placement of the tubes holding blood.
- Never place both tubes housing water and blood into the same adapters but should be placed in different adapters for even weight distribution.
- Place the adapters carefully and gently into the rotor buckets
- Seal the buckets with the lids and close the centrifuge.
- Use only with rotors which have been loaded properly.
- Make sure the rotor is locked properly into place before operating the centrifuge.
- Never overload the rotor.
- Never start the centrifuge when the centrifuge door is open.
- Do not lean on the centrifuge.
- Do not place anything on top of the centrifuge during a run.
- Gently close the centrifuge door. The centrifuge door mechanism will click and lock in place.
- Turn on the centrifuge by pressing the start button.
- Select the required speed and time from preprogramed setting or manually using the arrow keys (3000xg for 10 mins for each tube).

Once the centrifuge has completely stopped spinning wait for an audible sound and then open the centrifuge. Remove the tubes from the centrifuge and place them in a tube rack.

1.3.2 Handling of collected blood

Three different types of test tubes will be used per study participant to collect venous blood. The collected blood will be designated for whole blood, or plasma and serum separation. One 8ml EDTA tube (with added anticoagulant) will be used to collect whole blood for analysis, one 6ml heparin tube will be used for plasma extraction, and one 8.5ml SST tube will be used for serum extraction. Tubes will be labelled with study timepoint (T1, T2 or T3), participant ID, and type of sample. All information regarding blood collection tubes is presented in Table 1.

Table 1. Volume of blood in different test tubes

Test tube	**Blood volume**	**Designated for:**
EDTA tube	6 ml	Whole blood
Heparin gel tube	6 ml	Heparin plasma extraction
SST tube	8.5 ml	Serum extraction
Total blood:	22.5ml	

- The whole blood sample (6ml) collected in the EDTA tube will be stored at -80ºC, as indicated in Table 2.

Table 2. Volumes and use of EDTA whole blood sample.

Whole blood aliquot no.	EDTA volume	Designated for the analysis of:
1	6 ml	HbA1c

- The blood (8.5ml) collected in the SST tube will be left to separate at room temperature for 20 mins and then centrifuged at 3000 rpm for 10 min. The extracted (heparin) plasma will be pipetted into 4 aliquots of 1 ml (considering a 50% efficiency of centrifugation in plasma extraction). One aliquot of 1ml will be used for determining glucose, insulin, lipids, LFT and hsCRP, while the 3 aliquots of 1ml each will be stored at -80ºC, as indicated in Table 3.

Table 3. Volumes and use of SST plasma aliquots.

Plasma aliquot no.	EDTA plasma volume	Designated for the analysis of:
1	1000 µl	Glucose, insulin, lipids, LFT, hsCRP
		Designated for:
2	1000 µl	Storage at -80ºC
3	1000 µl	Storage at -80ºC
4	1000 µl	Storage at -80ºC

- The blood (6 ml) collected in the heparin tube will be centrifuged at 3000 rpm for 10 min and the extracted plasma will be pipetted into 3 aliquots of 600 µl (considering a 50% efficiency of centrifugation in plasma extraction). One aliquot of 600 µl will be used for determining cytokine concentrations, while the remaining 3 aliquots of 500 µl each will be stored at -80ºC, as indicated in Table 4.

Table 4. Volumes and use of heparin plasma aliquots.

Plasma aliquot no.	Heparin plasma volume	Designated for the analysis of:
1	1ml	Cytokines (IL-1β, IL-6, IL-8, IL-10, and TNF)
		Designated for:
2	1ml	Storage at -80ºC
3	1ml	Storage at -80ºC
4	1ml	Storage at -80ºC

NOTE: It is essential that ONLY NON-HAZARDOUS waste be placed in the wastepaper/ general rubbish bins. Pipette tips should be disposed in sharps containers, whereas laboratory and associated waste directly involved in specimen processing (i.e blood collection tubes, gloves etc) must be disposed in biological waste bags.

1.4 Blood storage

Eppendorf tubes or screw cap tubes must be clearly labelled with identification, media used and date, placed in a freezer well rack and should not be stored for long periods on a bench, but must be transferred with an ice esky box to a dedicated storage area (i.e. refrigerator, cold room or cupboard) as soon as possible.

Laboratory coats must be removed and hung up before leaving laboratory areas and should be laundered once a week. Hands must be washed with an antibacterial agent BEFORE leaving laboratory (Hibiclens/Microshield or equivalent, followed by extensive rinsing).

Participant Information Sheet/Consent Form

Interventional study - *Adult providing own consent*

Title	Optimising outcomes for people with knee pain through food: FEAST randomised controlled trial
Short Title	The FEAST trial
Ethics Reference Number	HEC22044
Project Sponsor	La Trobe University
Coordinating Principal Investigator/ Principal Investigator	Dr Adam Culvenor (School of Allied Health, Human Services and Sport (SAHHSS), La Trobe University)
Associate Investigator(s)	Dr Brooke Devlin (School of Human Movement and Nutrition Sciences, University of Queensland) Prof. Peter Brukner (SAHHSS, La Trobe University) Ass. Prof. Joanne Kemp (SAHHSS, La Trobe University) Prof. Kay Crossley (SAHHSS, La Trobe University) Dr Andrea Mosler (SAHHSS, La Trobe University) Dr Josh Heerey (SAHHSS, La Trobe University) Ms Lynette Law (PhD student, SAHHSS, La Trobe University) Ms Amanda Attanayake (SAHHSS, La Trobe University)
Location	La Trobe University

Part 1 What does my participation involve?

1 Introduction

You are invited to take part in this research project because you have knee pain. This research project aims to assess the effectiveness of two different programs provided through advice and education by a qualified dietitian to improve your knee pain, function and quality of life.

This information sheet tells you about the research project. It explains the tests and treatments involved. Knowing what is involved will help you decide if you want to take part in the project. Please read this information carefully. Ask questions about anything that you don't understand or want to know more about. Before deciding whether or not to take part, you might want to talk about it with a relative, friend or your local doctor.

Your participation is voluntary

Participation in this research is completely voluntary and there will be no cost to you. If you don't wish to take part, you don't have to. If you decide you want to take part, you will be given a copy of this Participant Information Sheet and asked to sign the consent section. By signing it you are telling us that you:

- Understand what you have read
- Consent to take part in the research project
- Consent to have the tests and treatments that are described
- Consent to the use of your personal and health information as described.

You will be given a copy of this Participation Information Sheet and Consent Form to keep.

2 What is the purpose of this research?

As you may be aware, knee pain is very common and is often associated with knee osteoarthritis. Osteoarthritis is the most common form of arthritis and is a leading cause of disability in Australia. Currently, there is no cure for osteoarthritis, therefore it is important to investigate treatments that can improve the main symptoms associated with osteoarthritis: pain, swelling, stiffness and movement difficulties. We will recruit 140 adults who have knee pain.

This study is being conducted by researchers at La Trobe University and is partly funded by the National Health and Medical Research Council (NHMRC) of Australia and Dr Peter Brukner. All assessments and consultations will be at **no cost** to you.

3 Who can participate?

You can participate in this study if you meet all the following:

- Between 45-85 years of age and understand written and spoken English
- Activity-related knee pain on most days of the past month
- Knee pain for at least 3 months
- No morning knee stiffness, or morning stiffness that lasts less than 30mins
- Willing to complete the assigned 12-week eating program and attend all appointments (detailed below)

You are not eligible and cannot participate in this study if you meet any of the following:

- Knee pain not primarily due to osteoarthritis (e.g., fibromyalgia, referred pain)
- Bilateral knee replacement
- Already strictly following a specific diet (e.g., low-carb, paleo, Mediterranean, Vegan)
- Received treatment from a dietitian, or knee injection, in the past 3 months
- Experienced ≥5kg weight loss in the past 3 months or body weight ≥200kg
- Planning to have knee surgery in the next 6 months
- Pregnant or breastfeeding
- History of psychiatric or eating disorder (excluding anxiety/depression) or bariatric surgery

4 What does participation in this research involve?

This study will be conducted over 6 months in total (see flowchart on next page).

Pre-baseline (online/phone) appointment

You will be asked to attend a 30-minute Zoom/telephone appointment prior to your first face-to-face appointment. At this appointment, we will discuss the consent form, outline the fasting process needed to complete your blood test and DEXA scan, and answer any questions you might have. We will also explain how to complete a 3-day food diary, which will be done using a smart phone application or paper-based food diary (personal preference).

Baseline (first) appointment

This appointment will be arranged at a convenient time for you at La Trobe University, Bundoora and will take approximately 2 hours. You will be asked to not eat/drink anything or conduct any exercise in the morning of your appointment (i.e., fasting for 12-hours) for the purpose of a blood test. At the appointment, we will assess your:

- Height, weight, waist circumference and blood pressure
- Body composition measured via a Dual-energy X-ray Absorptiometry Scan (DEXA).
  This involves laying on the scanner bed for ~7 mins. The machine uses small doses (<1% yearly dose) of radiation to assess tissue density (how much muscle and adipose tissue you have). The total effective dose of radiation has been calculated by a Medical Physicist (see risks below). Light clothing with no metal (e.g., zips, clips, underwire) should be worn (gown provided if needed). All measures will be taken by trained

researchers who hold Victorian Government radiation licenses and comply to the Code of Practice set out by the Australian Radiation Protection and Nuclear Safety Agency.

- Blood test: A trained researcher qualified to take blood will collect a small amount of blood (~25 mL, equivalent to ~4 teaspoons) from a forearm vein to assess inflammation levels.
- Questionnaires assessing your pain, activity level and quality of life and food intake
- Functional tests: i) how many times you can stand from a chair in 30 secs; and ii) how fast you can walk 40 metres.

We will provide a snack/drink as soon as you complete the DEXA and blood tests.

Random assignment to one of two different treatments

At the end of the first appointment at La Trobe University, you will be randomly assigned (50:50 chance, like a coin toss) to receive a program (from qualified dietitians) to either:

i) minimise processed foods that are known to promote inflammation and optimise foods shown to reduce inflammation; or
ii) minimise foods that are known to be high in fat content.

This means neither you nor the researchers will be able to choose which group you are assigned to. We do not know which treatment is best; to find out we need to compare the two programs. Although the two programs involve modifying some types of food that you eat, you can eat as much as you like of these foods. **You do not need to restrict the amount of food that you eat**.

Irrespective of which group you are assigned to, you will receive specific education and advice from an Accredited Practising Dietitian (APD) in a dietary consultation at the start of the study (at the end of your first appointment at La Trobe University). Your dietitian will also work with you to develop a personalised management plan to support you throughout the study. You will be asked to follow the program for 12 weeks (but you can continue for as long as you like). We will ask you to record your food intake for 3 days at up to six different times throughout the study.

Support phone calls

To support you throughout the study and answer any questions you have, we will arrange up to four follow-up consultations to be conducted over the phone/online during the 12 weeks. This phone call will take approximately 15-20 minutes. At these times, we will also ask you to complete some of the same questionnaires online (via a secure link provided by e-mail).

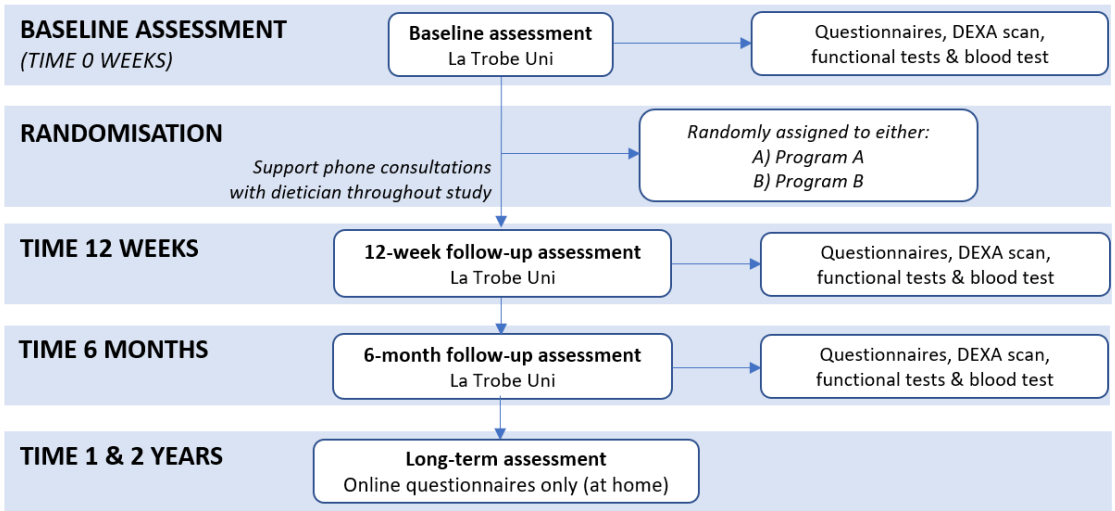


Figure 1. Flowchart of study assessments

Follow-up appointments

So that we can assess the results of the program you have been assigned, we will ask you to return for face-to-face appointments at La Trobe University at **12 weeks and 6 months after your first appointment.** These follow-up appointments will be like the first appointment where

we will do all the same tests and questionnaires. You will need to fast (not eat/drink anything) the morning of your appointment for the blood test. You will have another dietary consultation with the study dietitian who will provide support for you to continue with the program you have been assigned. You should allow about 2 hours for these appointments. To assess longer-term results, we will ask you to complete the same online questionnaires at 1 and 2 years after your first appointment. The total time commitment for participating will be approximately 6-8 hours.

There are no additional costs associated with participating in this research project. All medical care and tests (i.e., dietitian consultations, DEXA scan, blood tests) required as part of the research project will be provided free of charge. The results of the DEXA scan and blood tests will not be used to diagnose health conditions, but only to evaluate the effects of the intervention. We will provide you with your individual results when the DEXA and blood analyses are completed at the end of the study. Your travel costs to attend the assessments will be reimbursed up to $100.

At the end of the first 12 weeks, or after 6-12 months, we may also ask if you are willing to have a separate interview with one of the study researchers (this interview is optional and you can take part in the study without needing to complete the interview). The purpose of this interview is to seek feedback on the study treatments, satisfaction with the process received and whether there are any suggestions for improvement. The interview will take approximately 30 minutes, but you can cease the interview at any time. To ensure responses are correctly interpreted, responses to questions will be audio recorded and transcribed. Audio recording transcriptions will be completed by 'Transcription Australia' on their secure, encrypted Australian-based software. Although voice in your audio recording could lead to your identification, this file will not be used during analysis. Instead, a re-identifiable transcription, which you will have the opportunity to check for accuracy, will be used for analysis. Re-identifiable means that we will use a code number and not your name on data collected to ensure your anonymity. Following the completion of analysis of this transcription, the audio file associated with your interview will be deleted. After analysis, overall findings and conclusions from all interviews will also be sent to you, to allow an opportunity to make any further comments. We will seek around 40 participants to be interviewed. It is your decision or not whether you wish to be interviewed.

5 What are the alternatives to participation?

You do not have to take part in this research project to receive treatment for your knee. Other options are available; these include seeing a physiotherapist or dietitian (e.g., private or public health centre). The research team will discuss these options with you before you decide to take part in this project. You can also discuss the options with your doctor, dietitian or physiotherapist.

6 What are the possible benefits of taking part?

We cannot guarantee or promise that you will receive any benefits from this research. However, possible benefits may include improvement of pain, function, quality of life, physical activity, and confidence in your knee. You may gain valuable insight into how to manage your food intake and specific anti-inflammatory and low-fat foods, nutrients and eating habits. The expected benefit to society is the development of a drug-free and non-invasive treatment option to help manage pain and disability associated with osteoarthritis. This will give doctors and patients alternative ways to manage knee pain, which in turn may lead to improvements in the quality of life for patients.

7 What are the possible risks and disadvantages of taking part?

With any medical treatment there are: (i) risks we know about; (ii) risks we don't know about; and (iii) risks we don't expect. We have listed the risks we know about below. You may have none, some or all the effects listed below, and they may be mild, moderate or severe. If you have any of these side effects, or are worried about them, talk with the study coordinator.

Possible Side Effect	How often is it likely to occur?	How severe might it be?	How long might it last?
Emotional distress due to involvement in research and completion of questionnaires	Rarely; although can occur when completing study questionnaires	Minimal	While completing the study questionnaires
Emotional distress due to diet assessment	Rarely; although can occur when assessing food intake prior to, or during, appointments	Minimal	While completing the food diary or assessment
Discomfort due to body measurements	Can occur while measurements are done by your dietitian or researcher	Minimal Mild	During appointment only
Discomfort due to blood test	Rarely; while blood is being collected	Mild	Bruising or swelling may last 1-3 days
Exposure to ionising radiation	1x 7-minute scan at initial, 12-week and 6-month appointment	Minimal	Effect too small to measure
Tiredness/change in bowel patterns with change in diet	Any change in diet can make you feel tired or have different bowel patterns	Minimal	1-2 weeks
Contraction of COVID-19	Can occur during the face-to-face assessments	Minimal Moderate	1-2 weeks

If you become upset or distressed because of your participation in the research, the study coordinator together with the qualified dietitian will assist you with appropriate support. We can also provide you information about services you can access to seek help for emotional distress.

Risks associated with completing study questionnaires and diet assessment
Completing questionnaires about your knee pain, function, quality of life and dietary intake may cause emotional distress. If you begin to feel upset or distressed when completing your questionnaires or dietary assessment, please let a member of the research team know. We will provide you with the appropriate support, including a document outlining services you can access to help with your emotional distress.

Risks associated with blood test
Having a blood sample taken may cause some discomfort or bruising. On very rare occasions, the blood vessel may swell, or blood may clot in the blood vessel, or the spot from which blood is taken could become inflamed. Some people may feel light-headed when having blood taken and may occasionally faint. Very rarely, there could be a minor infection or bleeding. A qualified person will take a very small amount of your blood (max 30mL each appointment (normal blood donation is 500mL)) using stringent infection control procedures. If you notice increased redness, swelling or other signs of infection in the days following your assessment, tell us immediately.

Risks associated with eating low-inflammatory foods or low-fat foods
As you adjust to the eating program you are assigned to, you may experience feelings of tiredness and/or changes in bowel habits and patterns. The researchers will assess your diet and ensure you are meeting your energy and nutrient needs throughout the study intervention. This eating program may be different than your normal diet and therefore influence your usual weekly shopping bill and expenses. As part of the consultations, you will be provided with some advice on how to follow the diet on a budget if required to ensure there is minimal financial burden.

Exposure to ionising radiation
If you choose to take part in this research, you will undergo three 7-minute DEXA scans (first, 12-week and 6-month assessments). DEXA scans are a non-invasive, fast and simple procedure. This research study involves exposure to a very small amount of radiation from a DEXA scan that you would not normally receive. As part of everyday living, everyone is exposed to naturally occurring background radiation and receives a dose of about 2 millisieverts (mSv) each year. The effective dose you will receive from all of these DEXA scans is approximately 0.03 mSv. At these

dose levels, no harmful effects of radiation have been demonstrated as any effect is too small to measure. The risk is believed to be minimal.

The scans we are taking are for research purposes and are not intended to be used like scans taken for a full clinical examination or to be used to help diagnose, treat or manage a particular condition. The whole-body DEXA scan may identify participants with a low bone mineral density. However, a whole body DEXA scan is not the established method for detecting low bone mineral density. Therefore, as a precaution if you are identified as having a low bone mineral density you will be encouraged to make an appointment with your General Practitioner to discuss the results.

Have you been involved in any other research studies that involve radiation? If so, please tell us. Please keep information contained within this Patient Information Sheet about your exposure to radiation in this study, including the radiation dose, for at least 5 years. You will be required to provide this dose to researchers of any future research projects involving exposure to radiation.

Contraction of COVID-19
You may be at risk of contracting COVID-19 during one of the face-to-face appointments at La Trobe University. Prior to attending La Trobe University, you will be screened for signs and symptoms of COVID-19 by a member of the research team. You will also need to be fully vaccinated (or hold a valid medical exemption) to be able to attend La Trobe University for your assessments. The research team will put in place the appropriate control measures to reduce the risk of COVID 19 transmission. The risk is believed to be minimal.

8 What if I withdraw from this research project?

You are under no obligation to continue with the research study. You may change your mind at any time about participating in the research. People withdraw from studies for various reasons, and you do not need to provide a reason.

You can withdraw from the study at any time by completing and signing the 'Participant Withdrawal of Consent Form'. This form is provided at the end of this document and is to be completed by you and supplied to the research team if you choose to withdraw at a later date.

If you withdraw from the study, you will be able to choose whether the study will destroy or retain the information it has collected about you. Information about you that has already been analysed (i.e., once you have been allocated to either program), may not be able to be destroyed to ensure accurate and unbiased study reporting. Personal details collected, such as your name and contact details, can be destroyed at any time upon study withdrawal.

9 What happens when the research project ends?

At the completion of the research project, you may continue to use the resources provided and to follow the eating program principles if you choose to. If requested, we will provide you with your individual results including your body composition (DEXA) assessment and whole study results. We, or other researchers, may also use coded information (so that you cannot be identified) collected for this research study in future related studies. If you consent (tick the box on the consent form) to be contacted for future related research, we will store your contact details (name, address, phone number, email) on the secure La Trobe University research drive, only accessible to members of the research team, and may contact you about future related research projects.

Part 2 How is the research project being conducted?

10 What will happen to information about me?

By signing the consent form you agree to the relevant research staff collecting and using personal information about you for the research project. Any information obtained in connection with this research project that can identify you will remain confidential and securely stored. It will be disclosed only with your permission, or in compliance with the law.

Storage, retention and destruction

The anonymity of your participation is assured with our procedure, in which a code number (not your name) will identify you. Data will be kept securely at La Trobe University in a locked filing cabinet and password protected research computer. Identifiable data will be stored for 15 years, then destroyed (electronic records deleted, paper-files shredded). Data will be strictly handled confidentially under guidelines set out by the National Health and Medical Research Council. The principal investigator (Dr Adam Culvenor) is responsible for maintaining this confidentiality.

In accordance with relevant Australian and/or Victorian privacy and other relevant laws, you have the right to request access to your information collected and stored by the research team. You also have the right to request that any information with which you disagree be corrected.

The results of this project may be published and/or presented in a variety of forums and used by research students to obtain a research degree. In any publication, presentation or data files shared with other researchers, information will be provided in such a way that you cannot be identified, except with your permission.

11 Who is organising and funding the research?

This research project is being conducted by Dr Adam Culvenor and a team of researchers. It has been funded by the NHMRC (GNT2008523) and Dr Peter Brukner. Dr Peter Brukner is also an investigator on the project and has written a book and developed an app that will be used as part of the study. He will not be involved in data collection, analysis or the decision to publish results. No member of the research team will receive a personal financial benefit from your involvement in this research project (other than their ordinary wages).

12 Who has reviewed the research project?

All research in Australia involving humans is reviewed by an independent group of people called a Human Research Ethics Committee (HREC). The ethical aspects of this research project have been approved by the HREC of La Trobe University Human Ethics Committee.

This project will be carried out according to the *National Statement on Ethical Conduct in Human Research (2018)*. This statement has been developed to protect the interests of people who agree to participate in human research studies.

13 Further information and who to contact

For all enquiries, you can contact the Clinical Trial Manager, during business hours:

Dr Adam Culvenor, Senior Research Fellow in Physiotherapy, La Trobe University
Telephone: 03 9479 5116; E-mail: a.culvenor@latrobe.edu.au

If you have any complaints about any aspect of the project, the way it is being conducted or any questions about being a research participant in general, then you may contact:

Reviewing HREC: La Trobe University Human Research Ethics Committee
Complaints Contact: Senior Human Ethics Officer, Ethics and Integrity, Research Office
Telephone: 03 9479 1443 E-mail: humanethics@latrobe.edu.au
* Please quote the application reference number HEC22044

LA TROBE UNIVERSITY

Consent Form - *Adult providing own consent*

Title	Optimising outcomes for people with knee pain through food: FEAST randomised controlled trial
Short Title	The FEAST trial
Ethics Reference Number	HEC22044
Project Sponsor	La Trobe University
Coordinating Principal Investigator/ Principal Investigator	Dr Adam Culvenor (La Trobe University)
Associate Investigator(s)	Dr Brooke Devlin (University of Queensland) Prof. Peter Brukner (La Trobe University) Ass. Prof. Joanne Kemp (La Trobe University) Prof. Kay Crossley (La Trobe University) Dr Andrea Mosler (La Trobe University) Dr Josh Heerey (La Trobe University) Ms Lynette Law (PhD student, La Trobe University) Ms Amanda Attanayake (SAHHSS, La Trobe University)
Location	La Trobe University

Consent Agreement

I have read the Participant Information Sheet and I understand the purposes, procedures and risks of the research described in the project.

I understand that data files may be shared with other researchers, and that information will be provided in such a way that I cannot be identified, except with my permission.

I have had an opportunity to ask questions and I am satisfied with the answers I have received. I freely agree to participate in this research project as described and understand that I am free to withdraw at any time during the study without affecting my future health care.

I understand that, if I decide to discontinue the study treatment, I may be asked to attend follow-up visits to allow collection of information regarding my health status. I agree that data gathered for the study may be published provided my name or other identifying information is not used.

☐ I wish… / ☐ do not wish… to receive results of the study
☐ I consent… / ☐ do not consent… to be contacted for future related research
☐ I consent… / ☐ do not consent…to have my interview responses audio-recorded/transcribed.
☐ I consent… / ☐ do not consent… to have my samples/data used in future research

I understand that I will be given a signed copy of this document to keep.

Name of Participant (please print) _____

Signature _____ Date _____

Declaration by Researcher†

I have given a verbal explanation of the research project, its procedures and risks and I believe that the participant has understood that explanation.

Name of Researcher† (please print) _____

Signature _____ Date _____

† An appropriately qualified member of the research team must provide the explanation of, and information concerning, the research project.