

Arthritis Research UK
Evidence Review Panel April-May 2016
Structured community rehabilitation programmes for
musculoskeletal health

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Group membership*

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Professor Ray Fitzpatrick - Professor of Public Health and Primary Care, University of Oxford

Anna Garratt - Early Diagnosis Lead, NHS Clinical Services, Department of Health

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Lindsey Hughes - Rehabilitation Programme Lead, NHS England

Professor Peter Kay - National Clinical Director for MSK Services, NHS England

Professor Anne-Maree Keenan - Professor of Applied Health Research, University of Leeds, UK

Sarah Marsh- Programme Manager, Clinical Policy and Strategy Team, NHS England

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Professor Tony Woolf - Chair, ARMA

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*Role descriptions correct at time of meetings



Overview

This expert panel was brought together by Arthritis Research UK to recommend a structured community rehabilitation programme that should be adopted nationally to improve health for people with arthritis. The intention is for this recommendation to be included in a commissioning document – Physical Activity Provision for People with Arthritis and Musculoskeletal Conditions – being jointly produced by NHS England, Public Health England, the Department of Health and Arthritis Research UK. Given that no systematic synthesis of evidence exists in this space, these recommendations would be a pragmatic, but evidence based, complete package of care rather than drawing on individual elements of a number of separate programmes.

Two outcomes were to be delivered:

- i. An overview of research evidence and the processes that lead to the recommendations
- ii. A brief summary to go into the PHE/NHS policy document.

Overview of Process

An initial teleconference meeting was held to provide the context for the Evidence Review Panel, to discuss and agree the Terms of Reference and to review the scope of the work (see Appendix A).

The panel was to identify and review established programmes that:

- Included, as a minimum, a strengthening exercise programme (already well evidence-based at reducing joint pain and improving function);
- Had a solid, published evidence-base for benefit;
- Could be delivered by a single appropriately-trained individual (e.g. fitness instructor) or health professional;
- Would be scalable to the population in England

The scope of the panel review activity was agreed:

- Ideally the group would review programmes suitable for people with musculoskeletal pain generally rather than specifically hip or knee (lower limb) pain, which would be particularly valuable from a general practitioner and commissioning perspective;
- As most of the published programmes have aimed at improving lower limb (hip and knee) symptoms, reviewers would initially focus on this, but subsequently would investigate and report back to the group on suitable spinal and upper limb programmes.

Toby Smith undertook a literature search and provided panel members with examples from the literature of suitable programmes, all of which focussed on lower limb symptoms.



Panel members were asked to rank all packages using a revised intervention decision matrix (adapted from Fowler and Dannenberg¹), the results were collated and presented to the meeting.

Four packages were found to rank highly: Fit and Strong, Stanford, ESCAPE-pain and GLA:D.

After detailed discussion (see Appendix B), the ESCAPE-pain package was selected:

- Robust evidence base including efficacy and health economics
- UK-developed and therefore culturally appropriate
- Established track record of local delivery in NHS setting
- Trialled using fitness instructors as well as physiotherapists
- Suitable for implementation in primary- and secondary-care settings.

Details of the literature search, review and outcomes are included in Appendix C.



Research background to the ESCAPE-pain programme

ESCAPE-pain was originated by Prof Mike Hurley with the support of an Arthritis Research UK Fellowship. In this pragmatic, cluster randomized, controlled trial, 418 people with chronic pain (recruited from 54 primary care surgeries) were randomized to usual care (pragmatic control) or the ESCAPE-pain programme. The programme investigated the long-term (up to 30 months) clinical and cost effectiveness of a rehabilitation program combining self-management and exercise.

The trial showed that ESCAPE-pain, had clinical and cost benefits that were sustained for up to 30 months after completing the program. It was more clinically effective, with less health care costs, and more cost effective than usual care. The trial showed that the programme could be easily translated into clinical practice, providing more effective and efficient care for people with OA and chronic joint pain.²

Since 2013 the Health Innovation Network has led the implementation and development of the programme. Now the Health Innovation Network and Arthritis Research UK are working together to scale up the ESCAPE-pain programme so that more people with arthritis can benefit from taking part.



Appendix A – Minutes from Evidence Review Panel teleconference 12th April 2016

Benjamin Ellis (BE) introduced Philip Conaghan (PC) as the chair of this panel. BE & PC then described how this panel's work fitted in the context of a wider piece of work involving a collaboration between Arthritis Research UK, Department of Health, Public Health England and the NHS, looking at local physical activity provision for people with arthritis. This will result in a document for public authorities and commissioners and cover the full range of provision from access to local pools and exercise facilities through to access to physiotherapy. Publication is planned for summer this year.

The document considers physical activity provision in four tiers and while definitions/wording is not finalised, these approximate to:

- Tier 1:** Accessible community facilities (open spaces, cycle paths, arthritis-friendly gyms, accessible swimming pools)
- Tier 2:** Supervised physical activity (for example. T'ai Chi, Yoga, aqua aerobics, walking groups)
- Tier 3:** Structured community rehabilitation programmes (akin to cardiac/pulmonary rehabilitation)
- Tier 4:** Individualised support (physiotherapy, sports and exercise medicine)

The purpose of this evidence review panel is to make a recommendation for a "Tier 3" programme that can be included in the document. The expert review panel will review the available well-defined physical activity programmes for providing pain reduction and increased mobility for people with joint pain. In addition to considering the evidence for efficacy, the panel should include other factors, such as feasibility for national roll-out.

Initial discussion centred on what the desired elements of such a programme would look like:

- The intervention should include a strengthening exercise programmes (already well evidence-based at reducing joint pain and improving function);
- The intervention recommended should be evidence-based;
- Interventions should be delivered by a single appropriately-trained individual (e.g. fitness instructor) or health professional;
- It should be scalable to the population in England

Anne Maree-Keenan (AMK) raised the point regarding the involvement of behaviour change and psychological interventions. All agreed that programmes may have an element of such interventions within their programmes but would not be an essential. The components raised above are the essential (core) aspects for an included programme.

Discussion then moved to the role of the panel:

- Toby Smith (TS) has already searched the available programmes, with the help of Osteoarthritis Research Society International (OARSI) programme summary;
- In the first stage, the panel would review all programmes to investigate the quality and evidence-base for each of these programmes;



- The panel will then score each programme using a version of the Fowler and Dannenberg framework³. This was developed by John Hopkins University and considers the (1) effectiveness (2) feasibility (3) cost effectiveness (4) sustainability (5) ethical considerations (6) political and social will (7) potential for unintended benefits (8) potential for unintended risks.

Discussion about scope of programmes:

- Muir Gray (MG) suggested that from a general practitioner and commissioning perspective it would be most valuable to have programmes suitable for people with musculoskeletal pain generally rather than specifically hip or knee (lower limb) pain;
- PC and TS thought that most of the interventions were aimed improving lower limb symptoms, but that TS would need to investigate spinal and upper limb programmes;
- Krysia Dziedzic (KD) suggested that TS and PC firstly review the NICE draft guidelines on low back pain which may be a useful starting point for a rapid review of spinal interventions;
- It was agreed that TS and PC would prepare a lower limb summary programme (now) as well as a upper limb and spinal review (subsequently) of programmes for the panel to review;
- TS to contact KD and JH Verbeek⁴, regarding the upper limb and spinal (as well as unpublished literature) to improve the scoping search.

Discussion on programmes in development:

- KD raised the issue of programmes that are currently in development. It was thought that such programmes without a published evidence base could not be included in the current recommendation, but could be considered in future iterations of this work;
- PC and TS asked all members for any information they may have on programmes which may be in the "pipeline" but not out in the public domain, as these could nevertheless be referenced;
- KD highlighted that, for example, Nicki Walsh's ESCAPE-pain multi-joint pain and Nadine Foster's BEEP work would be examples of programmes in development. It was acknowledged that it may be valuable to understand everything (published or unpublished) as the unpublished evidence may underpin future recommendations

Other notes and actions:

- We may also be able to highlight where there is a lack of programmes (*i.e.* research agenda)
- MG stressed need to present this piece of work as a value proposition within the care pathway; not about *cost savings*, but about how can we add value using current resources. Value proposition section needs to be included in the rapid review.

Timelines:

- It was agreed that the scoring tool and lower limb summary document should be circulated in week commencing 18 April 2016;



- With the upper limb and spinal summary review to be circulated subsequent to this
- PC requested that people should respond ***within 2 weeks***;
- The objective is to identify the top 3-4 programmes can be identified before the 17 May London-based face-to-face meeting;
- The shortlisted programmes will then be further discussed on the day and a decision made on which programme the panel recommends for people with musculoskeletal symptoms.



Appendix B – Minutes from Evidence Review Panel consensus meeting 17th May 2016

Introductions

Phil Conaghan introduced himself as the chair and Dr Benjamin Ellis reminded the group of the purpose of the meetings overall aim:

[The aim of the review panel group is to inform a paper on Physical Activity Interventions by Arthritis Research UK, The National Health Service and Public Health England to be published in 2016. The panel will look at programmes that will provide limited physical activity intervention for people with joint pain delivered by a trained instructor. This aim is to identify something that would be scalable across England]

and thanked the group for coming together on such a short timeline. The group went round the table and introduced themselves.

1. Presentation

Toby Smith presented a PowerPoint presentation showing the combined results of the scoring of the nine candidate programmes, against the suggested criteria. From the results, four programmes were shortlisted for discussion: ESCAPE-pain, Fit and Strong, GLA:D, and Stanford.

2. Presentation Discussion and finalising a programme

The group discussed these remaining four programmes shortlisted from the intervention criteria results.

General points included:

- There was generally a lack of information about the cost of the programmes; this would likely be the first question that commissioners and local authorities would ask
- A cost-benefit/cost-consequence model would be helpful in helping commissioners decide whether to proceed.
- Some models require paid professional, instructors; others are lay volunteer led, which has impacts for affordability, sustainability; programmes requiring highly-trained staff (e.g. physiotherapist, level 4 fitness instructor) may be harder to implement due to skills shortages; mixed models of provision would require building up trust between different groups.
- Some people with arthritis may prefer to take part in a group led by a professional such as physio, compared to either a fitness instructor or a trained lay person.



More specifically:

- Participating in Fit and Strong could be a challenge for older adults as involves attending classes three times a week. There was a high dropout rate; it was thought that it would not integrate well within the NHS.
- An advantage of the Stanford model was that it applied to health conditions beyond arthritis, which could be important for people with multimorbidity. It was noted that the model of delivery is different to the other three programmes. There was potential for difficulties with copyright as no modifications would be allowed and a political acceptability issue around the programme, particularly as historically there had been a repeated failure for it to catch on. The holistic approach, including anxiety and depression, was a real strength of this model that should not be forgotten in future work.
- From the published work, GLA:D seems a work in progress with insufficient evidence base. As a programme based in a secondary care pathway, rather than in primary care, this could on the one hand improve the cost: benefit ratio, but was less suitable to a UK health system based on primary care.
- ESCAPE-pain seemed the best “on paper” in terms of efficacy and there was health economics data; but this could be because much of the research was relatively recent and so the studies better designed; it was also designed for, and tested in, a UK-context. ESCAPE-pain seemed the most politically acceptable.

The group agreed that ESCAPE-pain was the preferred choice of programme to recommend.

There was a discussion about where in the clinical pathway ESCAPE-pain was best implemented, and recognition that the answer would be a mixture of health economics, policy considerations, practicality, and public and clinician preference.

There were not thought to be any copyright issues around ESCAPE-pain, much of the development of which was funded by Arthritis Research UK. The developers of ESCAPE-pain will be contacted and be updated on these deliberations and to discuss next steps.

3. Next steps

- Minutes from the group will be written up and circulated
- Final draft report will be circulated for comment
- Arthritis Research UK to confirm copyright/licensing status of ESCAPE-pain.
- Arthritis Research UK to contact ESCAPE-pain developers to update on decision.
- Benjamin Ellis and Phil Conaghan to have further discussion on the programmes with Muir Gray and Peter Kay as they were unable to attend the panel meeting.
- The components that were successful in eliminated programmes will be evaluated and possibly considered for the report.



Appendix C – Summary of Evidence, Appraisal and Outcomes

Objective: To identify an agreed structured rehabilitation programme for lower limb osteoarthritis symptom control and self-management to facilitate physical activity engagement.

Design: Scoping review (Work Package 1) with expert opinion group discussion (Work Package 2).

Work Package 1: Programme Identification (Scoping Review)

Methods

Design

The scoping review has become increasingly popular as a form of knowledge synthesis (Colquhoun et al, 2014⁵). In accordance with the Arksey and O'Malley framework⁶, an initial scoping review was undertaken to assess the extent of literature on packages of care for the management of lower limb osteoarthritis. Using this approach, evidence was gained from quantitative sources, qualitative sources, economic evaluations, expert options, guidelines and policy-based recommendations (Khalil et al, 2016⁷). Through this, all potentially eligible packages of care could be identified to then be graded and evaluated by an expert panel convened for Work Package 2's consensus meeting. Through this the research question posed in Work Package 1 was: what are the packages of care for people with lower limb osteoarthritis and joint pain to improve symptom management to facilitate engagement in physical activity?

Sources of evidence

Structured community rehabilitation programmes were identified from four sources of evidence.

1. *Evidence from published and unpublished databases.* This included assessing the databases: MEDLINE, CINAHL, EMBASE, PEDro, AMED and trial registries/grey literature including: OpenGrey, clinicaltrials.gov, Current Clinical Trials and the World Health Organization's International Clinical Trial Registry.
2. *Evidence on research synthesis evaluations.* These were identified from the databases: Database of Abstracts of Reviews of Effects (DARE) for quality-assessed systematic reviews of interventions, Cochrane Database of Systematic Reviews, NHS Health Technology Assessment (HTA) programme reports, and the Centre for Reviews and Dissemination (CRD) HTA database, National Institute for Health and Clinical Excellence (NICE) guidelines.
3. *Evidence on economic evaluations.* These were identified from the databases: NHS Economic Evaluation Database (NHS EED), NICE guidelines (for economic modeling studies performed to support guideline recommendations and other economic evidence), and NHS HTA program reports and CRD HTA database (for health technology assessments incorporating economic evaluation).



4. *Evidence from Arthritis Research UK and Networks.* This source of evidence supplemented and was used to verify the other three sources of evidence gathering. This evidence was principally from Arthritis Research UK's previous horizon scanning activities and correspondence with international collaborators and experts (i.e. Professor David Hunter, Professor of Rheumatology, University of Sydney; Prof Aileen Davis, University of Toronto).

Eligibility Criteria

Structured community rehabilitation programmes were considered eligible if they met the following criteria:

1. Structured community rehabilitation programmes delivered by a health professional OR trained lay OR health OR exercise professionals.
2. Individuals with lower limb joint osteoarthritis or joint pain.
3. The programmes were required to contain some form of prescribed strengthening exercise intervention.
4. One outcome and aim of the programme is to increase physical activity
5. Provided published evidence on clinical outcomes. We excluded any interventions where there was no currently available published literature.

Structured community rehabilitation programmes were excluded if they:

1. Were delivered by a multidisciplinary team consisting of a number of different professionals. This was considered difficult to scale at a national level, therefore not appropriate to this recommendation.
2. If packages of care were to individuals as part of a hospital admission and in-patient stay i.e. residential/institutional chronic pain 'schools'.
3. Interventions which were designed and evaluated solely for people under the age of 40 years.

Identification and Data Extraction of Structured Community Rehabilitation Programmes

The results of the search strategy were synthesised by TS using a pre-defined data extraction table. From the identified publications, citations were grouped into specific programmes. Data on each programme was then extracted to identify the following characteristics: name of programme; frequency and number of patient visits required; composition of programme; population programme assessed on; mode and personnel of delivery of programme; whether the programme was delivered in a group setting or one-to-one; country of origin of programme, setting programme of care has been tested in (i.e. community or acute hospital setting); and publications specifically attributed to the design and evaluation of the programme. All data were extracted by one individual using a pre-defined data extraction template.



The results of the data extraction process were reviewed by TS, AMK, PC. From this, the final eligibility of the packages of care were determined through discussion, based on the defined eligibility criteria.

Quality of Evidence

The quality of evidence underpinning each of the structured community rehabilitation programmes was assessed using the Oxford Centre for Evidence-Based Medicine 2011 Levels of Evidence (OCEBM Level of Evidence Working Group, 2011⁸). Through this, each package of care was evaluated against the treatment, to determine whether the intervention could 'help' for the condition of interest. Evidence was then graded by the study quality, imprecision, indirectness, inconsistency and by absolute effect size, to determine whether it was Level 1 (highest level of evidence) or Level 5 (lowest level of evidence).

Results

A total of 1463 citations were identified from the four components of the search strategies. From these, 108 citations were deemed as potentially relevant. On further review of the full-text of these papers, 19 programmes were identified and deemed potentially eligible. On further review and discussion across the three lead reviewers (TS, AMK, PC), 10 programmes were deemed ineligible and excluded. These are summarised in Table 1.0 and listed below with the principle reasons for exclusion.

Programme did not include a strengthening exercise component:

- Arthritis Foundation's Walk with Ease
- Brosseau's Community Walking Programme
- Active Living Every Day
- Hip and Knee Book
- Activity Strategy Training
- Allegrante Walking Programme

Delivered by a multidisciplinary team, therefore more difficult to implement:

- Osteoarthritis Chronic Care Programme
- Better Management of Patients with Osteoarthritis
- Integrated Osteoarthritis Management programme
- Amsterdam Osteoarthritis Cohort (AMSOA) intervention

Following this, a total of nine structured community rehabilitation programmes met the eligibility criteria and were included in Work Package 2's consensus meeting. The packages of care were:

- IMPACT-P
- ALED – Active Living Every Date
- Fit and Strong!
- ADAPT – Arthritis, Diet and Activity Promotion Trial
- Halbert Primary Care Intervention
- People with Arthritis Can Exercise (PACE) programme



- Stanford Arthritis Self-Management Program
- Good Life with Arthritis in Denmark (GLA:D)
- ESCAPE-pain



Work Package 2: Evaluation of the Intervention Criteria for Package of Care Recommendations

Methods

Working Party Membership

Led by Professor Philip Conaghan and Dr Benjamin Ellis, an expert panel of individuals associated with osteoarthritis and musculoskeletal pain, primary care and exercise, physical activity, health promotion, from a variety of clinical, academic, commissioning, policy-making and lay perspectives were approached and convened to form the working party. A list of the membership is presented in Table 3.0.

Working Party Review of Packages of Care

Each member was provided with the summary of included packages of care table (Table 2.0) summarising each of the included nine packages of care. Using this, each Working Party member was asked to review, based on their opinion, each of the packages of care using the Fowler and Dannenberg (2008) Intervention Decision Matrix. This is a framework which considers the adoption of interventions or packages of care in relation to society and community care. It consists of nine criteria including: effectiveness, feasibility, cost, sustainability, ethical acceptability, political will, social will, potential for unintended benefit and potential for unintended benefit to “do no harm” (avoid potential risk). Each criterion is rated as “high, medium or low priority” with a final priority rating provided by respondents. Ten respondents assess the final priority rating using the categorical rating scale of ‘high’, ‘medium’ and ‘low’ whilst six respondents ranked the nine packages of care in order of priority for recommendation where one represented ‘most favourable to recommend’, and nine represented the ‘least favourable to recommend’.

Working Party members had 10 days to review each of the nine packages of care using this instrument, and to return their findings to Arthritis Research UK. These were then synthesised by TS into a combined results table and analysed with descriptive statistics.

Results

Sixteen working party members completed and returned their Fowler and Dannenberg (2008) assessment scores within the assessment period. The combined results table is presented as Table 4.0 and the results presented in Figures 1.0 to 11.0.

Figures 1.0 and 2.0 indicated the three most highly recommended packages of care were Fit and Strong!, the Stanford Arthritis Self-Management Program and ESCAPE-pain. This was reiterated for the specific criteria of effectiveness (Figure 3.0), feasibility (Figure 4.0), sustainability (Figure 6.0), political will (Figure 9.0), unintended benefit (Figure 10.0) and unintended benefit to “do no harm” (Figure 11.0). In addition, the Good Life with Arthritis in Denmark (GLA:D) package of care demonstrated significant potential for favourable recommendation for criteria including ethical acceptability (Figure 7.0), social will (Figure 8.0) and unintended benefit (Figure 10.0) over the other packages. Given these findings, four packages of care were consistently favoured as high or medium priority by the working party. These were:



- Fit and Strong!
- Stanford Arthritis Self-Management Program
- Good Life with Arthritis in Denmark (GLA:D)
- ESCAPE-pain

These findings, with Figures 1.0 to 11.0, were presented to the Evidence Review Panel at the consensus meeting on 17 May 2016, held at Arthritis Research UK's offices in London.

Based on the findings from the scoping search and Fowler and Dannenberg evaluation, these four programmes, summarised in Table 5.0, were proposed to the Evidence Review Panel as the current leading structured community rehabilitation programmes, using physical activity to improve symptom management for people with lower limb joint pain and arthritis.



Table 1.0: Arthritis Research UK Physical Activity Programmes – Excluded interventions lower limb summary

No.	Name	Programme Features	Selected Publications	Oxford EBM Levels of Evidence*	Reason for Exclusion
1	Arthritis Foundation's Walk with Ease	<p>Intervention: Self-Directed or Guided Programme to Support Physical Activity – community-based walking programme. Group (3 times weekly for 1 hour for 6 weeks) or self-guided with manual. Manual has exercise and lifestyle recommendations plus walking programme.</p> <p>Target Pop: People with arthritis.</p> <p>Delivered by: Group led by a trained lay instructor.</p> <p>Location: Community-based.</p>	<p>Nyrop KA, Charnock BL, Martin KR, Lias J, Altpeter M, Callahan LF. Effect of a six-week walking program on work place activity limitations among adults with arthritis. <i>Arthritis Care Res (Hoboken)</i>. 2011 Dec;63(12):1773-6.</p> <p>Callahan LF, Shreffler JH, Altpeter M, Schoster B, Hootman J, Houenou LO, Martin KR, Schwartz TA. Evaluation of group and self-directed formats of the Arthritis Foundation's Walk with Ease Program. <i>Arthritis Care Res (Hoboken)</i>. 2011 Aug;63(8):1098-107.</p> <p>Wyatt B, Mingo CA, Waterman MB, White P, Cleveland RJ, Callahan LF. Impact of the Arthritis Foundation's Walk With Ease Program on arthritis symptoms in African Americans. <i>Prev Chronic Dis</i>. 2014 Nov 13;11:E199</p> <p>Nyrop KA, Cleveland R, Callahan LF. Achievement of exercise objectives and satisfaction with the walk with ease program-group and self-directed participants. <i>Am J Health Promot</i>. 2014 Mar-Apr;28(4):228-30.</p>	Level 2	Programme does not include a strengthening exercise intervention
2	Community Walking Programme	<p>Intervention: Walking. Provision of pedometer and log book. Weekly walking sessions over 12 months. Intervention group also received 20 weekly sessions of a Behavioural intervention with goal setting and advice, then 6-monthly meetings and 12 weeks of telephone support. Monetary compensation for attending the walking groups.</p> <p>Target: Knee osteoarthritis</p> <p>Delivered by: Physical activity specialist.</p> <p>Location: Community-based.</p>	<p>Brosseau L, Wells GA, Kenny GP, Reid R, Maetzel A, Tugwell P, Huijbregts M, McCullough C, De Angelis G, Chen L. The implementation of a community-based aerobic walking program for mild to moderate knee osteoarthritis: a knowledge translation randomized controlled trial: part II: clinical outcomes. <i>BMC Public Health</i>. 2012 Dec 12;12:1073.</p> <p>Brosseau L, Wells GA, Kenny GP, Reid R, Maetzel A, Tugwell P, Huijbregts M, McCullough C, De Angelis G, Chen L. The implementation of a community-based aerobic walking program for mild to moderate knee osteoarthritis (OA): a knowledge translation (KT) randomized controlled trial (RCT): Part I: The Uptake of the Ottawa Panel clinical practice guidelines (CPGs). <i>BMC Public Health</i>. 2012 Oct 13;12:871.</p>	Level 2	Programme does not include a strengthening exercise intervention



3	ALED - Active Living Every Day	<p>Intervention: 20-weekly group sessions, behavioural therapy-based physical activity programme. Intervention teaches people the cognitive/behavioural skills to become and stay physically active. All receive the manual and a pedometer. Supported by online material.</p> <p>Target: Adults with arthritis.</p> <p>Delivered by: Trained instructors who follows an ALED manual.</p> <p>Location: Community-based.</p>	<p>Callahan LF, Schoster B, Hootman J, Brady T, Sally L, Donahue K, Mielenz T, Buysse K. Modifications to the Active Living Every Day (ALED) course for adults with arthritis. <i>Prev Chronic Dis.</i> 2007 Jul;4(3):A58.</p> <p>Sperber NR, Allen KD, Devellis BM, Devellis RF, Lewis MA, Callahan LF. Differences in effectiveness of the active living every day program for older adults with arthritis. <i>J Aging Phys Act.</i> 2013 Oct;21(4):387-401.</p> <p>Callahan LF, Cleveland RJ, Shreffler J, Hootman JM, Mielenz TJ, Schoster B, Brady T, Schwartz T. Evaluation of active living every day in adults with arthritis. <i>J Phys Act Health.</i> 2014 Feb;11(2):285-95.</p>	Level 2	Programme does not include a strengthening exercise intervention
4	The Hip & Knee Book	<p>Intervention: Provision of a booklet via the post, on self-management and physical activity from primary care.</p> <p>Target: People with hip or knee osteoarthritis who attended primary care.</p> <p>Delivered by: Postal delivery from GP practice.</p> <p>Location: GP practice centred.</p>	<p>Williams NH, Amoakwa E, Belcher J, Edwards RT, Hassani H, Hendry M, Burton K, Lewis R, Hood K, Jones J, Bennett P, Linck P, Neal RD, Wilkinson C. Activity Increase Despite Arthritis (AIDA): phase II randomised controlled trial of an active management booklet for hip and knee osteoarthritis in primary care. <i>Br J Gen Pract.</i> 2011 Aug;61(589):e452-8.</p> <p>Williams NH, Amoakwa E, Burton K, Hendry M, Lewis R, Jones J, Bennett P, Neal RD, Andrew G, Wilkinson C. The Hip and Knee Book: developing an active management booklet for hip and knee osteoarthritis. <i>Br J Gen Pract.</i> 2010 Feb;60(571):64-82.</p> <p>Williams NH, Amoakwa E, Burton K, Hendry M, Belcher J, Lewis R, Hood K, Jones J, Bennett P, Edwards RT, Neal RD, Andrew G, Wilkinson C. Activity Increase Despite Arthritis (AIDA): design of a Phase II randomised controlled trial evaluating an active management booklet for hip and knee osteoarthritis [ISRCTN24554946]. <i>BMC Fam Pract.</i> 2009 Sep 4;10:62.</p>	Level 2	Programme does not include a strengthening exercise intervention



5	Activity Strategy Training	<p>Intervention: Exercise plus activity strategy training (AST), a structured rehabilitation program taught by occupational therapists and designed to teach adaptive strategies for symptom control and engagement in physical activity - 8 sessions over 4 weeks with 2 follow-up sessions over a 6-month period.</p> <p>Target: Older adults with hip or knee osteoarthritis</p> <p>Delivered by: Occupational therapist in a group format.</p> <p>Location: Community-based.</p>	Murphy SL, Strasburg DM, Lyden AK, Smith DM, Koliba JF, Dadabhoy DP, Wallis SM. Effects of activity strategy training on pain and physical activity in older adults with knee or hip osteoarthritis: a pilot study. Arthritis Rheum. 2008 Oct 15;59(10):1480-7.	Level 3	Programme does not include a strengthening exercise intervention
6	“Allegrante and co” Walking Programme	<p>Intervention: 3-times weekly for an 8 weeks program of supervised fitness walking and patient education.</p> <p>Target: Knee osteoarthritis</p> <p>Delivered by: Unable to determine (most likely health care professional).</p> <p>Location: Hospital-based</p>	<p>Sullivan T, Allegrante JP, Peterson MG, Kovar PA, MacKenzie CR. One-year followup of patients with osteoarthritis of the knee who participated in a program of supervised fitness walking and supportive patient education. Arthritis Care Res. 1998 Aug;11(4):228-33.</p> <p>Allegrante JP, Kovar PA, MacKenzie CR, Peterson MG, Gutin B. A walking education program for patients with osteoarthritis of the knee: theory and intervention strategies. Health Educ Q. 1993 Spring;20(1):63-81.</p> <p>Kovar PA, Allegrante JP, MacKenzie CR, Peterson MG, Gutin B, Charlson ME. Supervised fitness walking in patients with osteoarthritis of the knee. A randomized, controlled trial. Ann Intern Med. 1992 Apr 1;116(7):529-34.</p>	Level 3	Programme does not include a strengthening exercise intervention



7	Osteoarthritis Chronic Care program (OACCP)	<p>Intervention: Coordinated multidisciplinary management including therapeutic exercise, diet, psychological support, occupational therapy and medical management.</p> <p>Target: People with osteoarthritis</p> <p>Delivered by: Multidisciplinary team</p> <p>Location: Both hospital/health centre and community-based.</p>	http://www.aci.health.nsw.gov.au/resources/musculoskeletal/osteoarthritis_chronic_care_program/osteoarthritis-chronic-care-program	Level 4	Delivered by an multidisciplinary team (therefore difficult to implement at scale)
8	Better management of patients with Osteoarthritis (BOA)	<p>Intervention: PT, OT and OA-communicator (i.e. “expert patient”) delivered Information, supported self-management, physical activity recommendations, optional individualized exercise programme, optional supervised exercise group sessions (using individual program).</p> <p>Target: People with osteoarthritis</p> <p>Delivered by: Physiotherapist, Occupational Therapist, Expert patient.</p> <p>Location: Community-based group intervention.</p>	Thorstensson, CA, Garellick, G, Rystedt, H, <i>and</i> Dahlberg, LE (2015), Better Management of Patients with Osteoarthritis: Development and Nationwide Implementation of an Evidence-Based Supported Osteoarthritis Self-Management Programme. Musculoskelet. Care, 13, 67–75	Level 3	Delivered by a multidisciplinary team (therefore difficult to implement at scale)



9	Integrated Osteoarthritis Management program (incorporate Healthy Weight For Life)	<p>Intervention: Weight loss (7.5-10%) and improved nutrition, muscle strengthening, land based and range of motion exercises, pain management strategies, education, monitoring and engagement strategies.</p> <p>Target: People with osteoarthritis</p> <p>Delivery: Largely by a multidisciplinary team</p> <p>Delivered by: Largely multidisciplinary through phone and electronic communication. Not face to face.</p> <p>Location: Phone/electronic based.</p>	http://oa.hwfl.com.au/	Level 4	Delivered by a multidisciplinary team (therefore difficult to implement at scale)
10	Amsterdam osteoarthritis cohort (AMSOA)	<p>Intervention: Coordinated multidisciplinary management including exercise, occupational therapy, psychological support, and medical management</p> <p>Target: People with osteoarthritis</p> <p>Delivered by: A multidisciplinary team</p> <p>Location: Unable to determine</p>	Unable to access resources.	Unable to assess.	Delivered by a multidisciplinary team (therefore difficult to implement at scale)

* Oxford Centre for Evidence-Based Medicine 2011 Levels of Evidence - <http://www.cebm.net/wp-content/uploads/2014/06/CEBM-Levels-of-Evidence-2.1.pdf>



Table 2.0: Arthritis Research UK Physical Activity Programmes – Included interventions lower limb summary

No.	Name	Intervention	Selected Publication	Comment	Oxford EBM Levels of Evidence*
1	IMPACT-P	<p>Intervention: 36 sessions over 9 months: 60 minute exercise programme delivered weekly for 3 months plus group cognitive behaviour therapy for 20 minutes to promote physical activity.</p> <p>Target: Knee osteoarthritis</p> <p>Delivered by: Trained healthcare professional.</p> <p>Group or Individual: Group</p>	<p>Focht BC, Garver MJ, Devor ST, Dials J, Lucas AR, Emery CF, Hackshaw KV, Rejeski WJ. Group-mediated physical activity promotion and mobility in sedentary patients with knee osteoarthritis: results from the IMPACT-pilot trial. J Rheumatol. 2014 Oct;41(10):2068-77</p> <p>Focht BC, Garver MJ, Devor ST, Dials J, Rose M, Lucas AR, Emery CF, Hackshaw K, Rejeski WJ. Improving maintenance of physical activity in older, knee osteoarthritis patients trial-pilot (IMPACT-P): design and methods. Contemp Clin Trials. 2012 Sep;33(5):976-82.</p>	<p>Pilot data only.</p> <p>Tested Location: Health care centre.</p> <p>Country of Origin: USA</p>	Level 3
2	ALED - Active Living Every Day	<p>Intervention: 20-weekly group sessions, behavioural therapy-based physical activity programme. Intervention teaches people the cognitive/behavioural skills to become and stay physically active. All receive the manual and a pedometer. Supported by online material.</p> <p>Target: Adults with arthritis.</p> <p>Delivered by: Trained instructors who follows an ALED manual.</p> <p>Group or Individual: Group</p>	<p>Callahan LF, Schoster B, Hootman J, Brady T, Sally L, Donahue K, Mielenz T, Buysse K. Modifications to the Active Living Every Day (ALED) course for adults with arthritis. Prev Chronic Dis. 2007 Jul;4(3):A58.</p> <p>Sperber NR, Allen KD, Devellis BM, Devellis RF, Lewis MA, Callahan LF. Differences in effectiveness of the active living every day program for older adults with arthritis. J Aging Phys Act. 2013 Oct;21(4):387-401.</p> <p>Callahan LF, Cleveland RJ, Shreffler J, Hootman JM, Mielenz TJ, Schoster B, Brady T, Schwartz T. Evaluation of active living every day in adults with arthritis. J Phys Act Health. 2014 Feb;11(2):285-95.</p>	<p>Limited published evaluations.</p> <p>Tested Location: Community-based (community centres).</p> <p>Country of Origin: USA</p>	Level 2



3	Fit and Strong!	<p>Intervention: 8-week interventions meet 3 times per week and include 60 min of strength, flexibility, and aerobic exercise instruction followed by 30 min of education/group discussion. The Fit and Strong! education sessions focus on using PA to manage OA; Fit and Strong! Plus addresses PA and weight loss management strategies. Augmented with 2 telephone calls (motivational interviewing on PA) per months in months 3-6.</p> <p>Target: Older adults with osteoarthritis.</p> <p>Delivered by: Trained 6 physical therapists and 12 exercise instructors.</p> <p>Group or Individual: Group</p>	<p>Hughes SL, Seymour RB, Campbell RT, Desai P, Huber G, Chang HJ. Fit and Strong!: bolstering maintenance of physical activity among older adults with lower-extremity osteoarthritis. <i>Am J Health Behav.</i> 2010 Nov-Dec;34(6):750-63.</p> <p>Hughes SL, Seymour RB, Campbell RT, Huber G, Pollak N, Sharma L, Desai P. Long-term impact of Fit and Strong! on older adults with osteoarthritis. <i>Gerontologist.</i> 2006 Dec;46(6):801-14.</p> <p>Hughes SL, Seymour RB, Campbell R, Pollak N, Huber G, Sharma L. Impact of the fit and strong intervention on older adults with osteoarthritis. <i>Gerontologist.</i> 2004 Apr;44(2):217-28.</p> <p>Seymour RB, Hughes SL, Campbell RT, Huber GM, Desai P. Comparison of two methods of conducting the Fit and Strong! program. <i>Arthritis Rheum.</i> 2009 Jul 15;61(7):876-84. doi: 10.1002/art.24517.</p> <p>Ory MG, Lee S, Zollinger A, Bhurtyal K, Jiang L, Smith ML. Translation of fit & strong! For middle-aged and older adults: examining implementation and effectiveness of a lay-led model in central Texas. <i>Front Public Health.</i> 2015 Apr 27;2:187.</p>	<p>Reported widely in the literature for osteoarthritis.</p> <p>Effectiveness and implementation data available.</p> <p>Tested Location: Community-based.</p> <p>Country of Origin: USA</p>	Level 2
4	ADAPT - Arthritis, Diet, and Activity Promotion Trial	<p>Intervention: 3-days/week exercise programme and dietary intervention which is group-based and founded in behaviour-change psychology for 4 months, then home-based. Advised on a walking programme and home exercises. At 4 months, monthly meetings and phone contact alternately every 2 weeks for 18-months.</p> <p>Target: Adults with knee osteoarthritis</p> <p>Delivered by: Exercise physiologists (exercises) and registered dietician for the dietary advice.</p> <p>Group or Individual: Group</p>	<p>Messier SP, Loeser RF, Miller GD, Morgan TM, Rejeski WJ, Seveck MA, Ettinger WH Jr, Pahor M, Williamson JD. Exercise and dietary weight loss in overweight and obese older adults with knee osteoarthritis: the Arthritis, Diet, and Activity Promotion Trial. <i>Arthritis Rheum.</i> 2004 May;50(5):1501-10.</p> <p>Miller GD, Rejeski WJ, Williamson JD, Morgan T, Seveck MA, Loeser RF, Ettinger WH, Messier SP; ADAPT Investigators. The Arthritis, Diet and Activity Promotion Trial (ADAPT): design, rationale, and baseline results. <i>Control Clin Trials.</i> 2003 Aug;24(4):462-80.</p>	<p>Limited interventions around physical activity.</p> <p>Tested Location: Facility-based for the first 4 months) then home-exercise programme.</p> <p>Country of Origin: USA</p>	Level 2



5	Halbert Primary Care Intervention	<p>Intervention: Individualised home-based exercise programme and seen 3 times (baseline, 3 and 6 months). Educational material discussed and pamphlet provided.</p> <p>Target: Adults with osteoarthritis (joint not specified).</p> <p>Delivered by: Exercise physiologist</p> <p>Group or Individual: Individual</p>	Halbert J, Crotty M, Weller D, Ahern M, Silagy C. Primary care-based physical activity programs: effectiveness in sedentary older patients with osteoarthritis symptoms. Arthritis Rheum. 2001 Jun;45(3):228-34.	<p>Single trial evaluating effectiveness.</p> <p>Tested Location: Primary care health centre setting.</p> <p>Country of Origin: Australia</p>	Level 3
6	People with Arthritis Can Exercise (PACE) programme	<p>Intervention: Twice weekly 8-12 week community-based health education and therapeutic exercise program.</p> <p>Target: Adults with arthritis or joint pain.</p> <p>Delivery by: Health or fitness professionals who have completed the arthritis Foundation training workshop.</p> <p>Group or Individual: Group</p>	<p>Schoster B, Callahan LF, Meier A, Mielenz T, DiMartino L. The People with Arthritis Can Exercise (PACE) program: a qualitative evaluation of participant satisfaction. Prev Chronic Dis. 2005 Jul;2(3):A11.</p> <p>Gyurcsik NC, Brittain DR. Partial examination of the public health impact of the People with Arthritis Can Exercise (PACE) program: reach, adoption, and maintenance. Public Health Nurs. 2006 Nov-Dec;23(6):516-22.</p> <p>Callahan LF, Mielenz T, Freburger J, Shreffler J, Hootman J, Brady T, Buysse K, Schwartz T. A randomized controlled trial of the people with arthritis can exercise program: symptoms, function, physical activity, and psychosocial outcomes. Arthritis Rheum. 2008 Jan 15;59(1):92-101. doi: 10.1002/art.23239.</p> <p>Minor MA, Prost E, Nigh M, et al. Outcomes from the Arthritis Foundation exercise program: a randomized controlled trial. Arthritis and Rheumatism. 2007;56:S309</p>	<p>Now called the Arthritis Foundation Exercise Program (AFEP)</p> <p>Tested Location: Community-based</p> <p>Country of Origin: USA</p>	Level 2



7	Stanford Arthritis Self-Management Program	<p>Intervention: Once-weekly for 6 weeks, (2 hours per week) guided by 2 trained lay instructors. Group setting in community. Education on joint protection, management strategies, physical activity, health beliefs. Exercises taught and performed for strength, flexibility and endurance.</p> <p>Target: Knee osteoarthritis.</p> <p>Delivered by: Trained lay instructors provided in a group setting.</p> <p>Group or Individual: Group</p>	<p>Barlow J, Turner A, Swaby L, Gilchrist M, Wright C, Doherty M. An 8 year follow-up of arthritis self-management programme participants. <i>Rheumatology</i>. 2009;48(2):128–133.</p> <p>Osborne RH, Wilson T, Lorig KR, McColl GJ. Does self-management lead to sustainable health benefits in people with arthritis? A 2-year transition study of 452 Australians. <i>The Journal of Rheumatology</i>. 2007;34(5):1112–1117</p> <p>Osborne RH, Buchbinder R, Ackerman IN. Can a disease-specific education program augment self-management skills and improve Health-Related Quality of Life in people with hip or knee osteoarthritis? <i>BMC Musculoskelet Disord</i>. 2006 Nov 30;7:90.</p> <p>Lorig K, Ritter PL, Plant K. A disease-specific self-help program compared with a generalized chronic disease self-help program for arthritis patients. <i>Arthritis and Rheumatism</i>. 2005;53(6):950–957.</p> <p>Kruger JM, Helmick CG, Callahan LF, Haddix AC. Cost-effectiveness of the arthritis self-help course. <i>Arch Intern Med</i>. 1998 Jun 8;158(11):1245-9.</p> <p>Centers for Disease Control and Prevention. Sorting Through the Evidence for the Arthritis Self-Management Program and the Chronic Disease Self-Management Program: Executive Summary of ASMP/CDSMP Meta-Analyses. May 2011. Accessed at www.cdc.gov/arthritis/docs/ASMP-executive-summary.pdf on October 26, 2012.</p>	<p>Widely reported and published in different countries.</p> <p>Tested Location: Community-based.</p> <p>Country of Origin: USA</p>	Level 2
8	Good Life with Arthritis in Denmark (GLA:D)	<p>Intervention: 2 sessions of PT-delivered Information, if available 1 additional session with “expert patient” and dietician, supported self-management, physical activity recommendations, PLUS 6 weeks of individuals supervised neuromuscular exercise program NEuroMuscular EXercise (NEMEX)</p> <p>Target: People with hip or knee osteoarthritis.</p> <p>Delivered by: Physiotherapist and expert patient in a group setting.</p> <p>Group or Individual: Group</p>	<p>Skou ST, Odgaard A, Rasmussen JO, Roos EM. Group education and exercise is feasible in knee and hip osteoarthritis. <i>Dan Med J</i>. 2012 Dec;59(12):A4554.</p>	<p>Pilot study data only presently published.</p> <p>Tested Location: Not specified but feasibly community or faculty-based.</p> <p>Country of Origin: Denmark</p>	Level 3



9	ESCAPE-pain	<p>Intervention: 12 supervised sessions (twice weekly for 6 weeks). Education on self-management with an individualised progressive exercise programme.</p> <p>Target: Knee osteoarthritis</p> <p>Delivered by: Physiotherapist</p> <p>Group or Individual: Group</p>	<p>Hurley MV, Walsh NE, Mitchell HL, Pimm TJ, Patel A, Williamson E, Jones RH, Dieppe PA, Reeves BC. Clinical effectiveness of a rehabilitation program integrating exercise, self-management, and active coping strategies for chronic knee pain: a cluster randomized trial. <i>Arthritis Rheum.</i> 2007 Oct 15;57(7):1211-9.</p> <p>Hurley MV, Walsh NE, Mitchell HL, Pimm TJ, Williamson E, Jones RH, Reeves BC, Dieppe PA, Patel A. Economic evaluation of a rehabilitation program integrating exercise, self-management, and active coping strategies for chronic knee pain. <i>Arthritis Rheum.</i> 2007 Oct 15;57(7):1220-9.</p> <p>Hurley MV, Walsh NE, Mitchell H, Nicholas J, Patel A. Long-term outcomes and costs of an integrated rehabilitation program for chronic knee pain: a pragmatic, cluster randomized, controlled trial. <i>Arthritis Care Res (Hoboken).</i> 2012 Feb;64(2):238-47. doi: 10.1002/acr.20642.</p> <p>Jessep SA, Walsh NE, Ratcliffe J, Hurley MV. Long-term clinical benefits and costs of an integrated rehabilitation programme compared with outpatient physiotherapy for chronic knee pain. <i>Physiotherapy.</i> 2009 Jun;95(2):94-102. doi: 10.1016/j.physio.2009.01.005.</p>	<p>Widely published evidence-base. Already adopted across London and a number of other UK sites.</p> <p>Tested Location: Faculty/clinic setting OR community-based as well.</p> <p>Country of Origin: UK</p>	Level 2
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* Oxford Centre for Evidence-Based Medicine 2011 Levels of Evidence - <http://www.cebm.net/wp-content/uploads/2014/06/CEBM-Levels-of-Evidence-2.1.pdf>



Table 3.0: Arthritis Research UK Physical Activity Programmes – Expert Review Panel Evaluation of Interventions Data

Criteria	IMPACT-P	ALED - Active Living Every Day	Fit and Strong!
Effectiveness <i>Effective intervention=high priority</i>	Low – 7 Medium - 4 High - 2 Unclear/N/A - 2	Low - 5 Medium - 6 High – 2 Unclear/N/A - 2	Low - 0 Medium - 3 High - 11 Unclear/N/A - 2
Feasibility <i>Feasible to deliver=high priority</i>	Low - 6 Medium - 4 High - 1 Unclear/N/A - 4	Low - 4 Medium - 5 High - 6 Unclear/N/A - 0	Low – 1 Medium - 5 High - 8 Unclear/N/A - 1
Cost <i>Low cost= high priority</i>	Low – 7 Medium - 3 High - 0 Unclear/N/A - 5	Low - 5 Medium - 7 High - 0 Unclear/N/A - 3	Low - 2 Medium - 8 High - 2 Unclear/N/A - 3
Sustainability <i>Sustainable intervention= high priority</i>	Low - 9 Medium - 4 High - 0 Unclear/N/A - 2	Low - 3 Medium - 9 High - 3 Unclear/N/A - 0	Low – 2 Medium - 8 High - 5 Unclear/N/A - 0
Ethical Acceptability <i>Acceptable= high priority</i>	Low – 1 Medium - 2 High - 9 Unclear/N/A - 3	Low - 0 Medium – 4 High - 10 Unclear/N/A - 1	Low - 0 Medium - 1 High - 12 Unclear/N/A - 2
Social Will <i>Likely to be supported by individuals= high priority</i>	Low - 4 Medium - 5 High - 5 Unclear/N/A – 1	Low - 3 Medium - 9 High - 3 Unclear/N/A - 0	Low – 2 Medium - 8 High - 5 Unclear/N/A - 0



Political Will <i>Likely to be supported by funders= high priority</i>	Low – 7 Medium - 3 High - 1 Unclear/N/A - 4	Low - 5 Medium - 6 High - 3 Unclear/N/A - 1	Low - 3 Medium - 5 High - 6 Unclear/N/A - 1
Potential for Unintended Benefits <i>Unintended benefits= high priority</i>	Low - 1 Medium - 5 High - 6 Unclear/N/A - 3	Low - 4 Medium - 6 High - 4 Unclear/N/A - 1	Low – 3 Medium - 3 High - 7 Unclear/N/A -2
Potential to “Do No Harm” <i>Few side effects=high priority</i>	Low – 0 Medium - 3 High - 8 Unclear/N/A - 4	Low - 1 Medium - 6 High - 7 Unclear/N/A - 1	Low - 0 Medium - 1 High - 8 Unclear/N/A - 3
Final ranking (ranked scores)	1 - 0 2 - 0 3 - 0 4 - 0 5 - 0 6 - 0 7 - 0 8 - 2 9 – 2	1 - 0 2 - 0 3 - 0 4 - 0 5 - 1 6 - 0 7 - 3 8 - 1 9 - 0	1 - 2 2 - 2 3 - 1 4 - 0 5 - 0 6 - 0 7 - 0 8 - 0 9 - 0
Final ranking (graded scores)	High – 0 Medium – 3 Low – 5 Unclear/N/A - 3	High – 0 Medium – 4 Low – 4 Unclear/N/A - 1	High – 4 Medium – 3 Low – 2 Unclear/N/A - 1

N/A – not applicable



Criteria	ADAPT - Arthritis, Diet, and Activity Promotion Trial	Halbert Primary Care Intervention	People with Arthritis Can Exercise (PACE) programme
Effectiveness <i>Effective intervention=high priority</i>	Low - 2 Medium - 6 High - 5 Unclear/N/A - 2	Low - 10 Medium - 2 High - 1 Unclear/N/A - 2	Low - 2 Medium - 7 High - 4 Unclear/N/A - 2
Feasibility <i>Feasible to deliver=high priority</i>	Low - 6 Medium - 7 High - 1 Unclear/N/A - 1	Low - 3 Medium - 7 High - 4 Unclear/N/A - 1	Low - 2 Medium - 8 High - 4 Unclear/N/A - 1
Cost <i>Low cost= high priority</i>	Low - 6 Medium - 3 High - 0 Unclear/N/A - 6	Low - 0 Medium - 6 High - 5 Unclear/N/A - 4	Low - 2 Medium - 9 High - 0 Unclear/N/A - 3
Sustainability <i>Sustainable intervention= high priority</i>	Low - 4 Medium - 6 High - 0 Unclear/N/A - 3	Low - 2 Medium - 8 High - 3 Unclear/N/A - 2	Low - 5 Medium - 7 High - 1 Unclear/N/A - 2
Ethical Acceptability <i>Acceptable= high priority</i>	Low - 1 Medium - 4 High - 7 Unclear/N/A - 3	Low - 0 Medium - 6 High - 7 Unclear/N/A - 2	Low - 0 Medium - 5 High - 9 Unclear/N/A - 1
Social Will <i>Likely to be supported by individuals= high priority</i>	Low - 3 Medium - 6 High - 5 Unclear/N/A - 1	Low - 3 Medium - 4 High - 5 Unclear/N/A - 3	Low - 1 Medium - 7 High - 6 Unclear/N/A - 1



Political Will <i>Likely to be supported by funders= high priority</i>	Low - 3 Medium - 5 High - 4 Unclear/N/A - 3	Low - 2 Medium - 6 High - 3 Unclear/N/A - 3	Low – 1 Medium - 10 High - 2 Unclear/N/A - 2
Potential for Unintended Benefits <i>Unintended benefits= high priority</i>	Low – 2 Medium - 3 High - 6 Unclear/N/A - 4	Low - 4 Medium - 5 High - 2 Unclear/N/A - 4	Low - 2 Medium - 1 High - 6 Unclear/N/A - 6
Potential to “Do No Harm” <i>Few side effects=high priority</i>	Low - 1 Medium - 2 High - 7 Unclear/N/A - 5	Low - 0 Medium - 3 High - 7 Unclear/N/A - 5	Low – 0 Medium - 0 High - 11 Unclear/N/A - 4
Final ranking (ranked scores)	1 - 0 2 - 2 3 - 1 4 - 0 5 - 2 6 - 0 7 - 1 8 - 0 9 - 0	1 - 0 2 - 0 3 - 0 4 - 0 5 - 1 6 - 2 7 - 0 8 - 1 9 - 1	1 - 0 2 - 0 3 - 0 4 - 2 5 - 0 6 - 2 7 - 0 8 - 0 9 – 1
Final ranking (graded scores)	High – 1 Medium – 5 Low – 3 Unclear/N/A - 1	High – 0 Medium – 2 Low – 6 Unclear/N/A - 2	High – 2 Medium – 3 Low – 3 Unclear/N/A – 2

N/A – not applicable



Criteria	Stanford Arthritis Self-Management Program	Good Life with Arthritis in Denmark (GLA:D)	ESCAPE-pain
Effectiveness <i>Effective intervention=high priority</i>	Low - 0 Medium - 7 High - 8 Unclear/N/A - 0	Low - 3 Medium - 5 High - 5 Unclear/N/A - 2	Low - 0 Medium - 3 High - 12 Unclear/N/A - 0
Feasibility <i>Feasible to deliver=high priority</i>	Low - 4 Medium - 3 High - 8	Low - 1 Medium - 10 High - 4	Low - 1 Medium - 6 High - 8
Cost <i>Low cost= high priority</i>	Low - 1 Medium - 6 High - 6 Unclear/N/A - 2	Low - 1 Medium - 7 High - 2 Unclear/N/A - 5	Low - 2 Medium - 6 High - 7 Unclear/N/A - 0
Sustainability <i>Sustainable intervention= high priority</i>	Low - 5 Medium - 5 High - 5 Unclear/N/A - 0	Low - 5 Medium - 5 High - 2 Unclear/N/A - 2	Low - 1 Medium - 7 High - 7 Unclear/N/A - 0
Ethical Acceptability <i>Acceptable= high priority</i>	Low - 1 Medium - 6 High - 7 Unclear/N/A - 1	Low - 1 Medium - 3 High - 10 Unclear/N/A - 1	Low - 1 Medium - 3 High - 10 Unclear/N/A - 1
Social Will <i>Likely to be supported by individuals= high priority</i>	Low - 3 Medium - 5 High - 7 Unclear/N/A - 0	Low - 0 Medium - 6 High - 7 Unclear/N/A - 2	Low - 1 Medium - 5 High - 9 Unclear/N/A - 0
Political Will	Low - 2	Low - 5	Low - 2



<i>Likely to be supported by funders= high priority</i>	Medium - 6 High - 5 Unclear/N/A - 1	Medium - 7 High - 2 Unclear/N/A - 1	Medium - 3 High – 9 Unclear/N/A - 1
Potential for Unintended Benefits <i>Unintended benefits= high priority</i>	Low - 3 Medium - 2 High - 7 Unclear/N/A - 3	Low - 3 Medium - 5 High - 5 Unclear/N/A - 2	Low - 2 Medium - 4 High - 6 Unclear/N/A - 3
Potential to “Do No Harm” <i>Few side effects=high priority</i>	Low - 2 Medium - 2 High - 6 Unclear/N/A - 2	Low - 0 Medium - 3 High - 10 Unclear/N/A - 2	Low - 0 Medium - 2 High - 11 Unclear/N/A - 2
Final ranking (ranked scores)	1 – 1 2 - 0 3 - 2 4 - 1 5 - 0 6 - 0 7 - 1 8 - 0 9 – 0	1 - 0 2 - 0 3 - 1 4 - 1 5 - 1 6 - 2 7 - 0 8 - 0 9 - 0	1 - 3 2 - 2 3 - 0 4 - 1 5 - 0 6 - 0 7 - 0 8 - 0 9 – 0
Final ranking (graded scores)	High – 6 Medium – 1 Low – 2 Unclear/N/A - 1	High – 3 Medium – 2 Low – 4 Unclear/N/A - 1	High – 3 Medium – 5 Low – 0 Unclear/N/A - 1

N/A – not applicable



Table 4.0: Summary Table of Final Shortlisted Packages of Care

	Origin	Strength Exercises	Delivered By			Delivered In		Education Provide	Evaluation		
			Physio	Exercise Instruct.	Lay Instruct.	Group	Frequency		RCT Ax	Health Econ Ax	Implment. Ax
ESCAPE-pain	UK	✓	✓	X	X	✓	2x6 weeks	✓	✓	✓	X
Stanford	USA	✓	X	X	✓	✓	1x6 weeks	✓	✓	✓	✓
Fit & Strong	USA	✓	✓	✓	X	✓	3x8 weeks	✓	✓	X	✓
GLA:D	Denmark	✓	✓	X	✓	✓	2 + 1x6 weeks	✓	X	X	X

Ax – Assessment; Instruct – Instructor; Physio - Physiotherapist



Figure 1.0: Final ranked grades

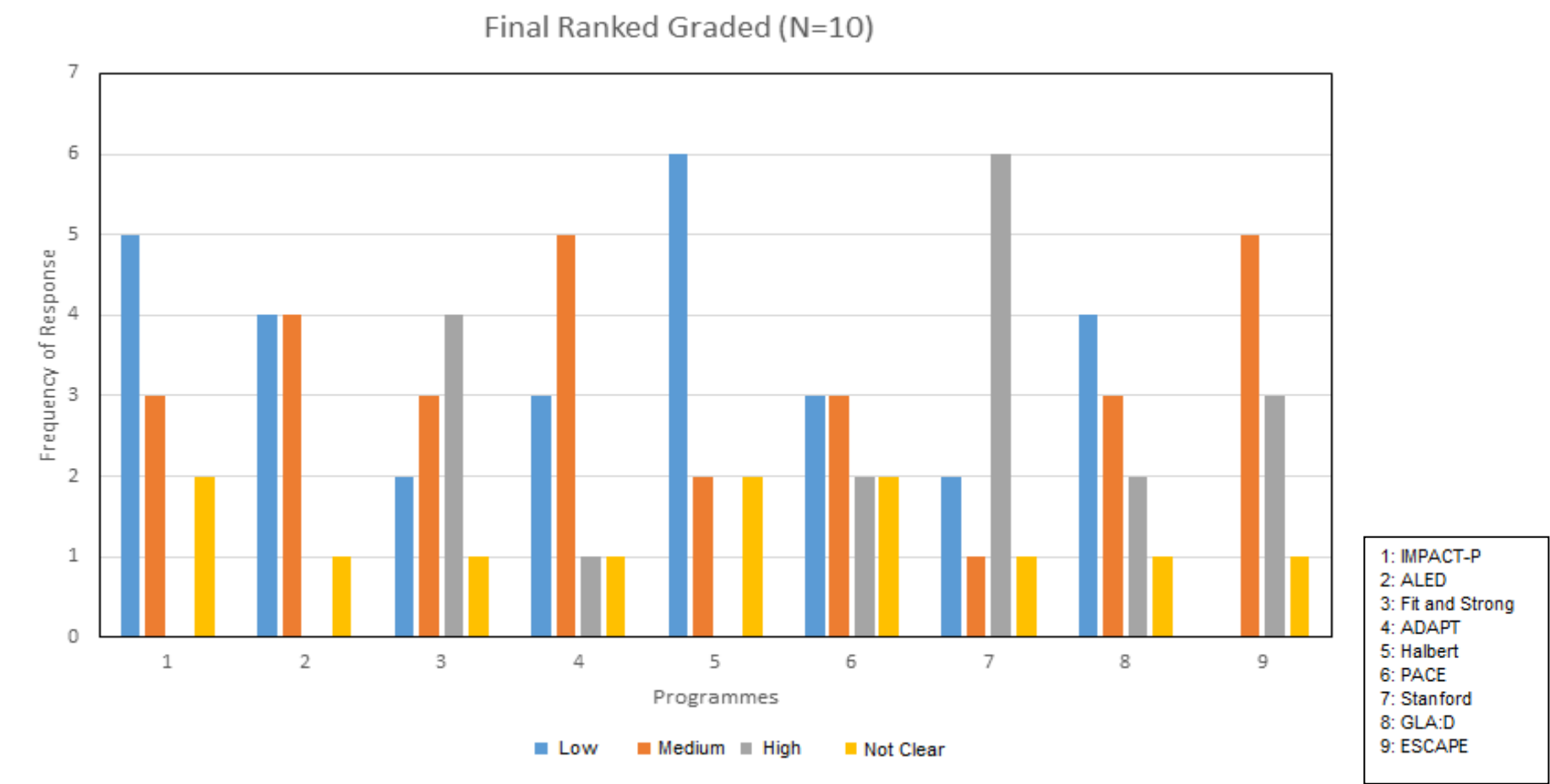


Figure 2.0: Final Ranked Scores

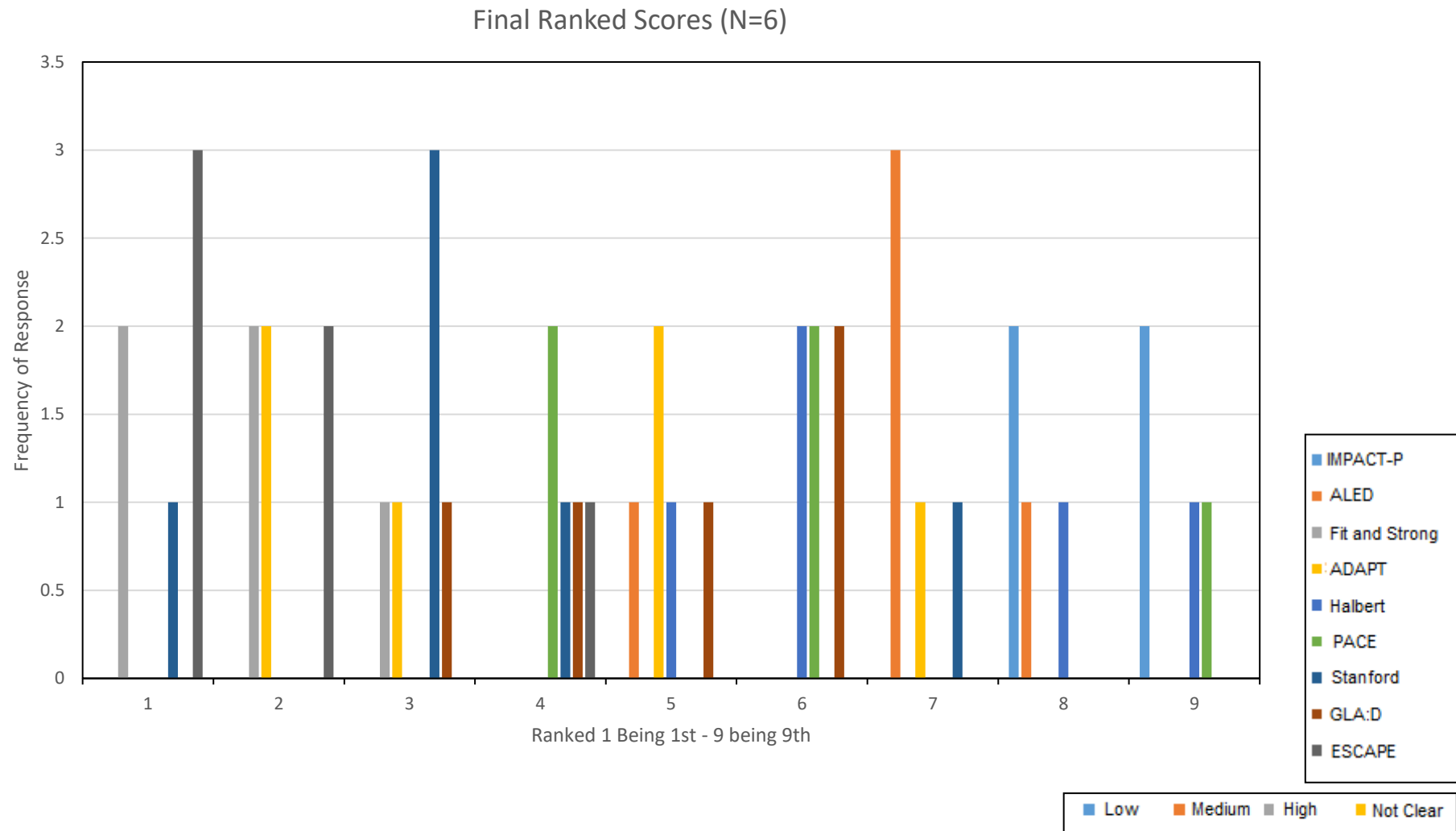


Figure 3.0: Results on effectiveness criterion

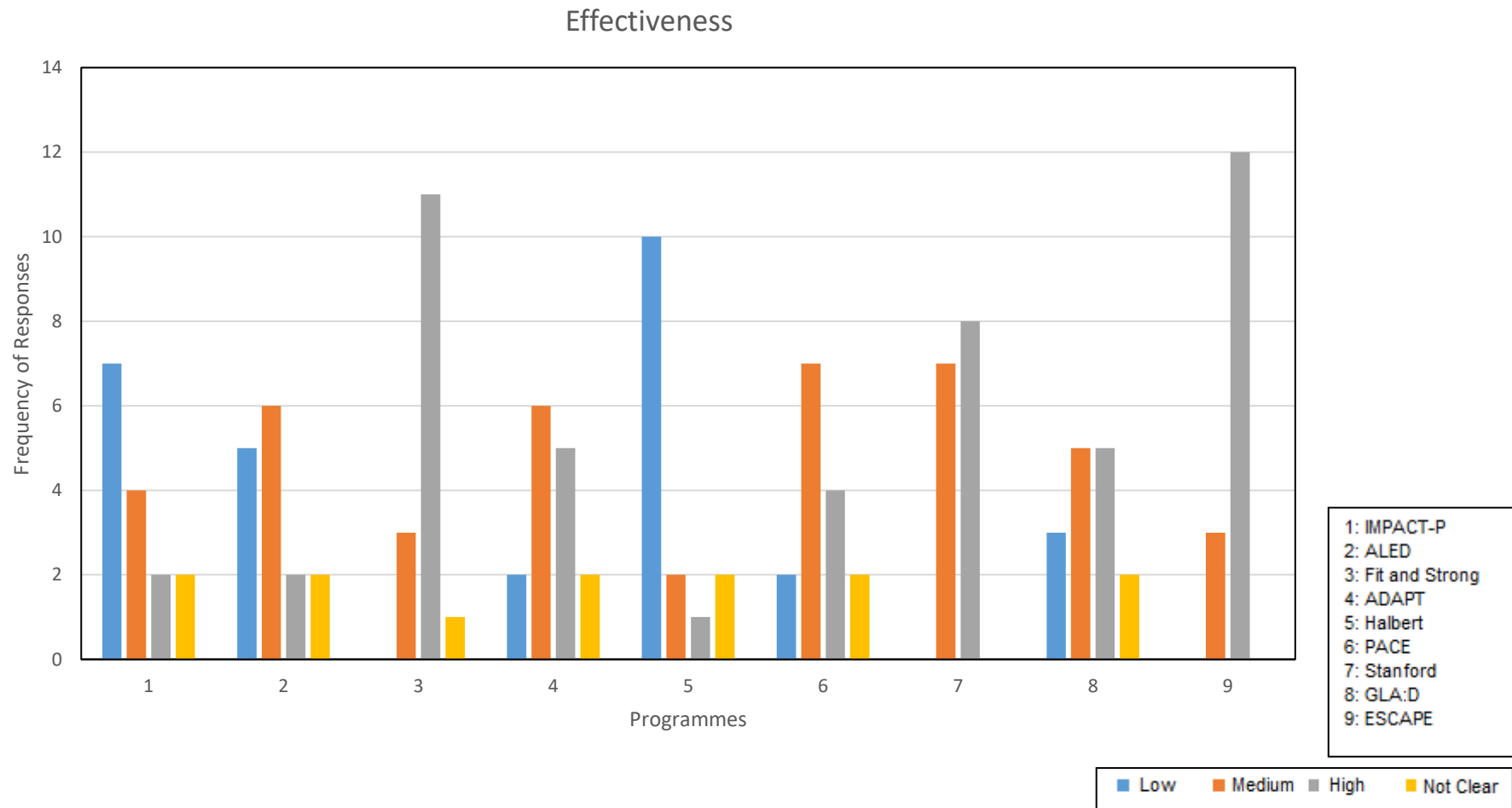


Figure 4.0: Results on feasibility criterion

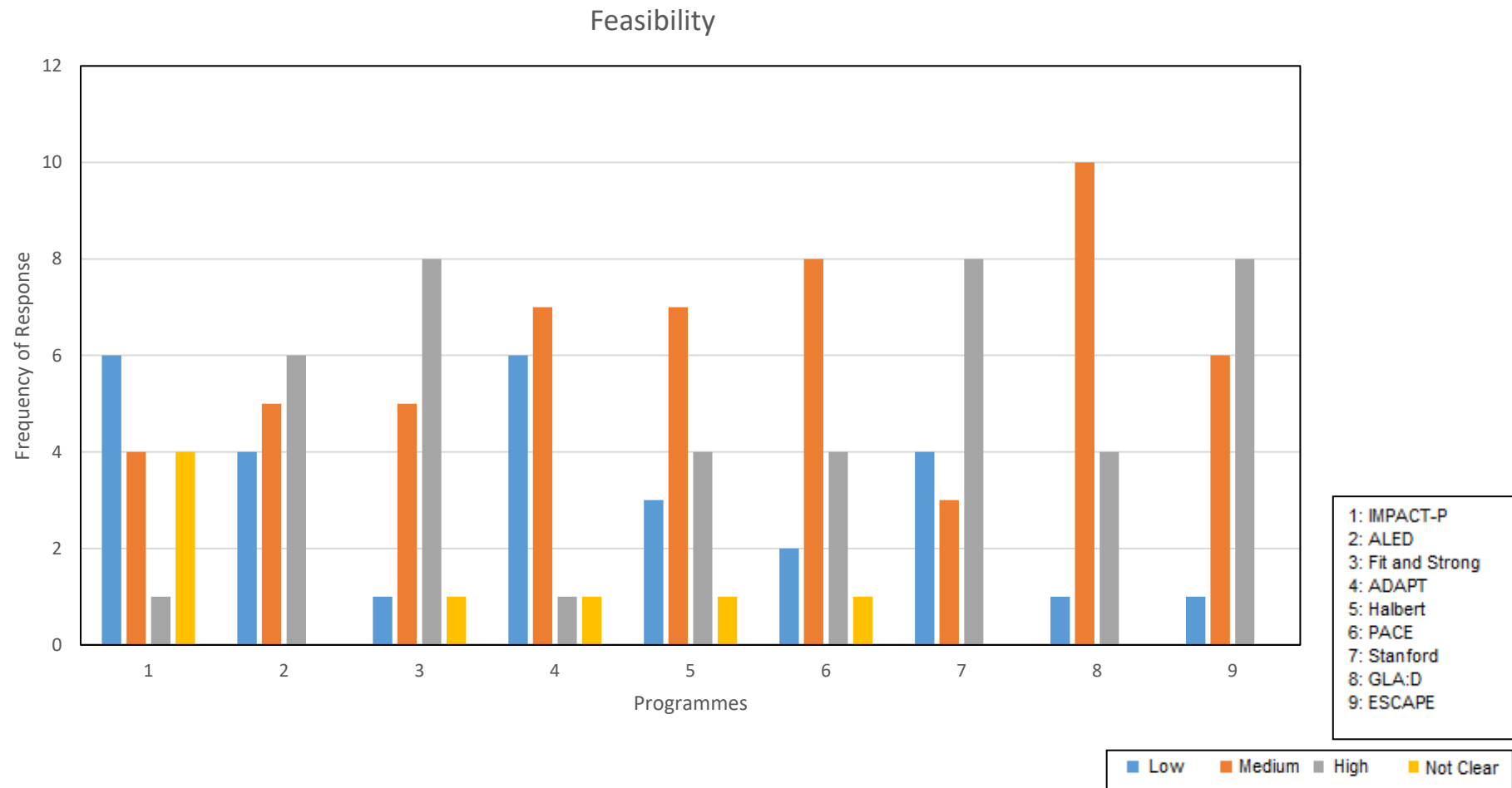


Figure 5.0: Results on cost criterion

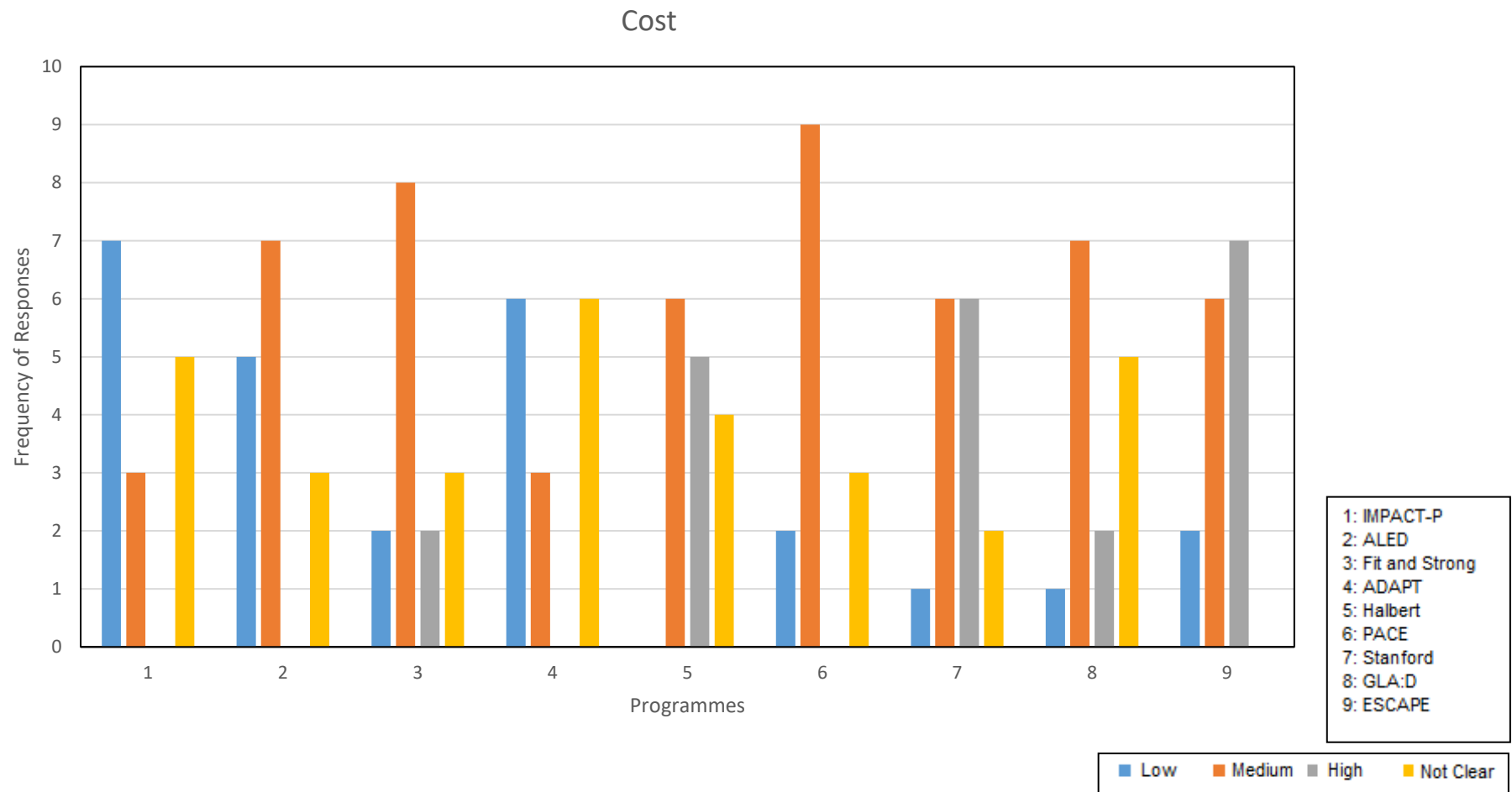


Figure 6.0: Results on sustainability criterion

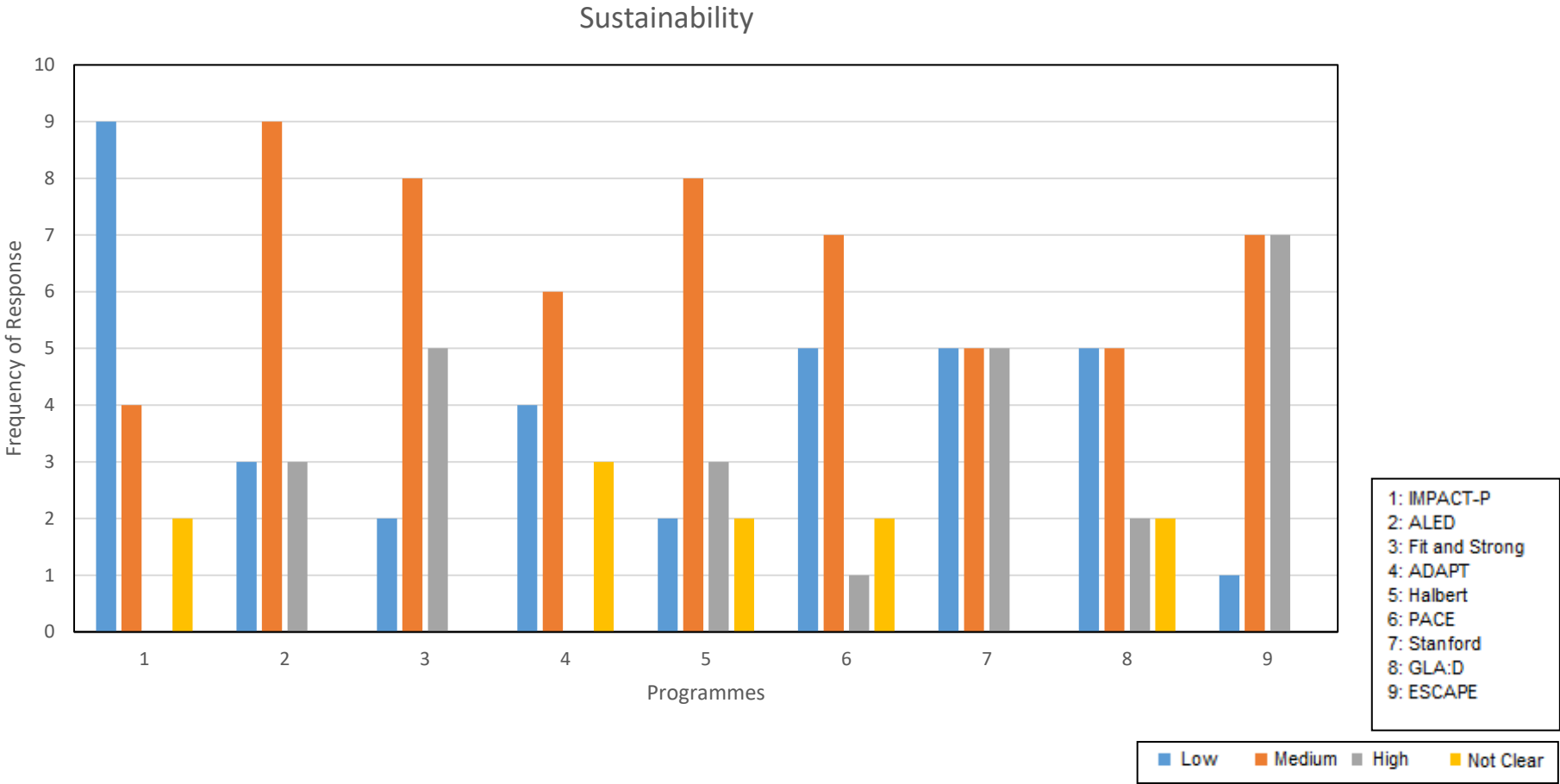


Figure 7.0: Results on ethical acceptability criterion

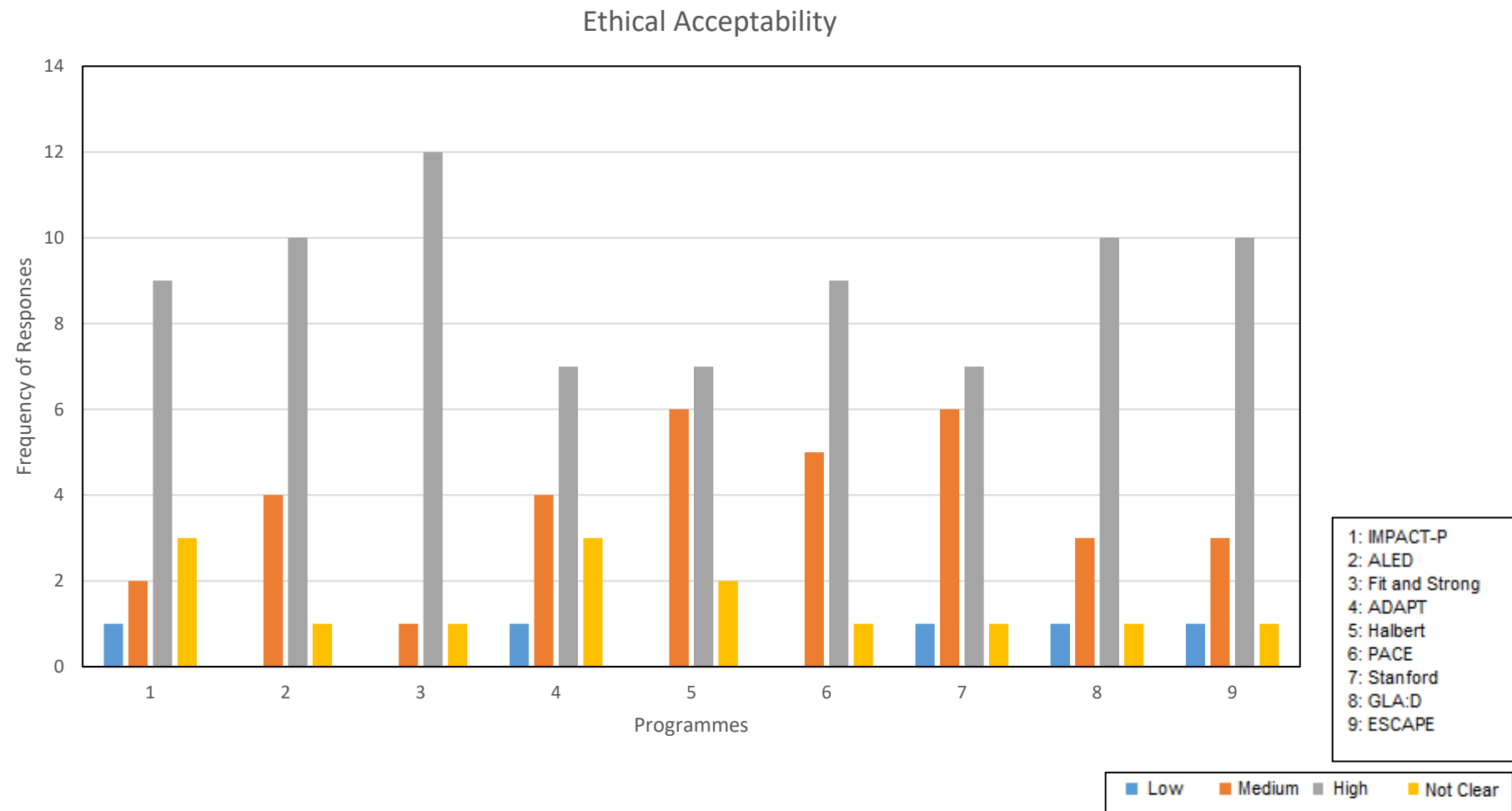


Figure 8.0: Results on social will criterion

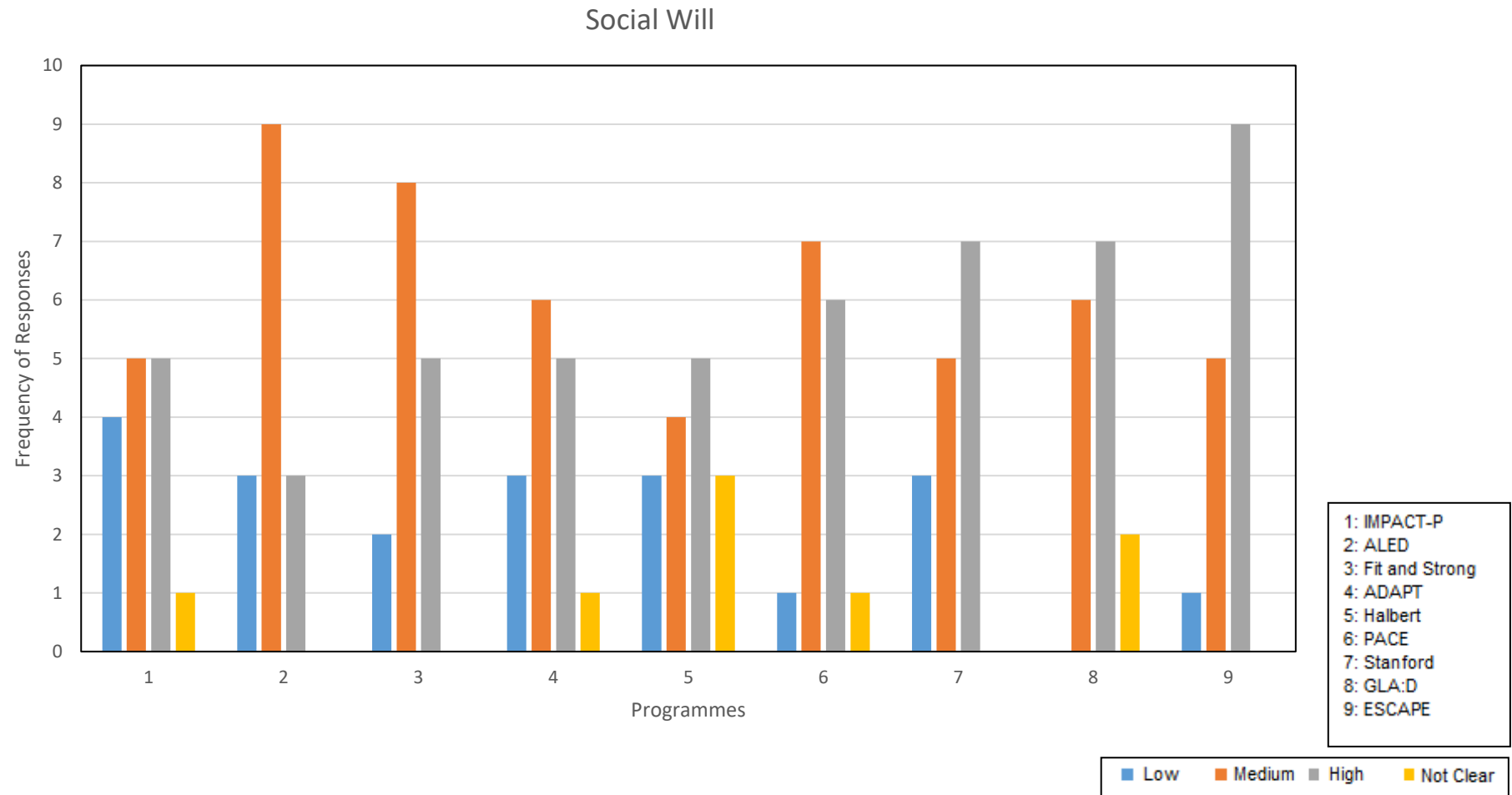


Figure 9.0: Results on political will criterion

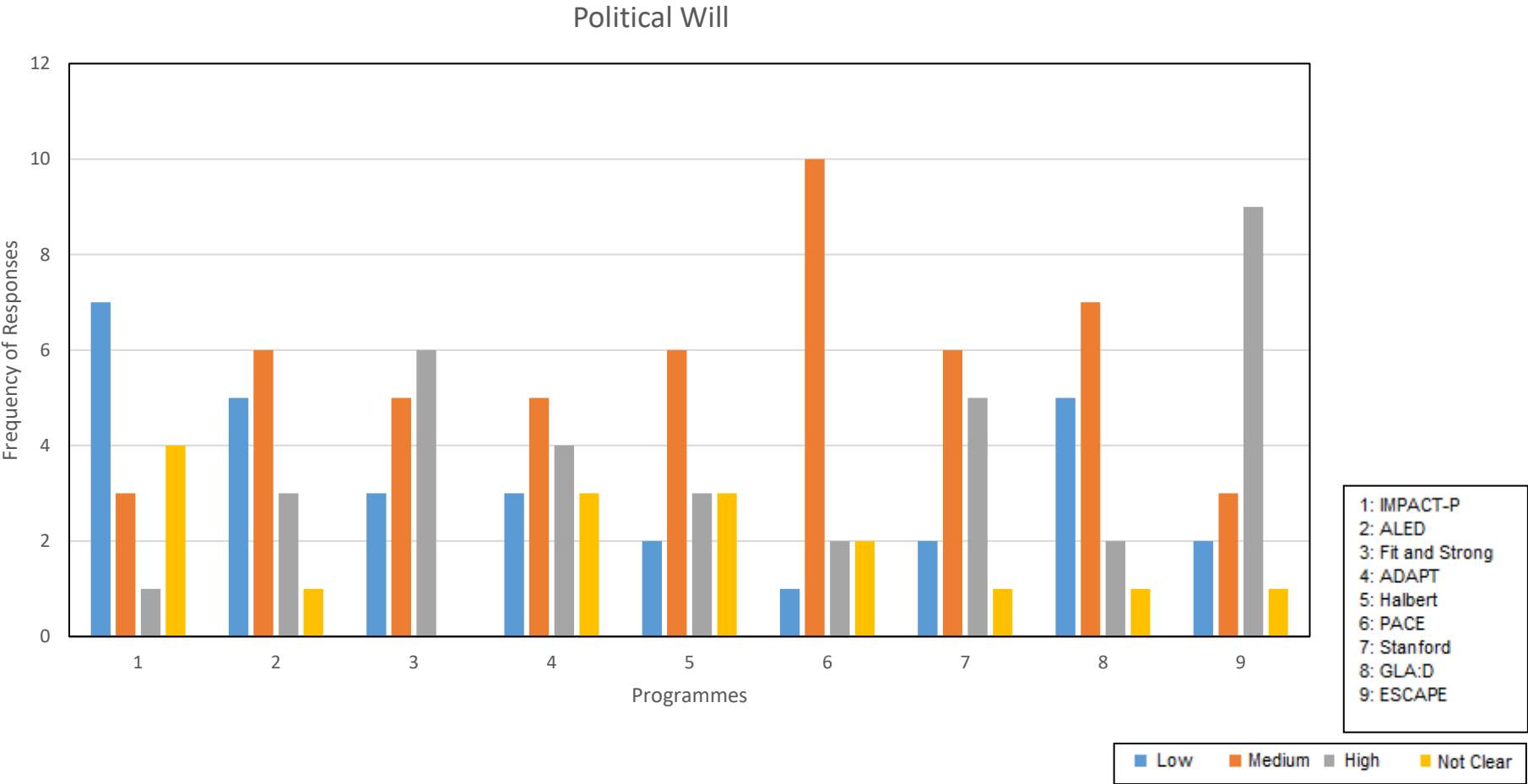


Figure 10.0: Results on unintended benefit criterion

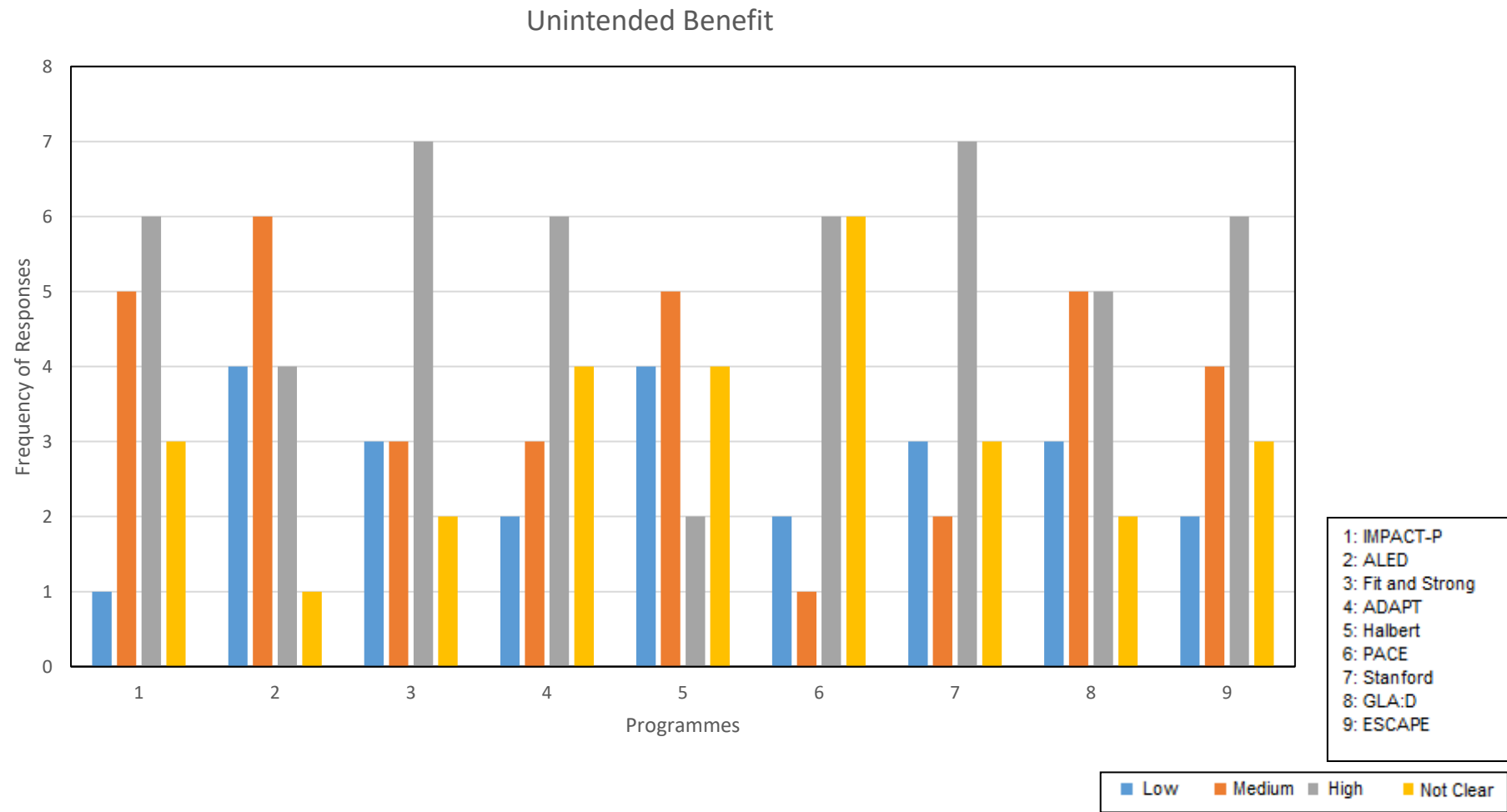
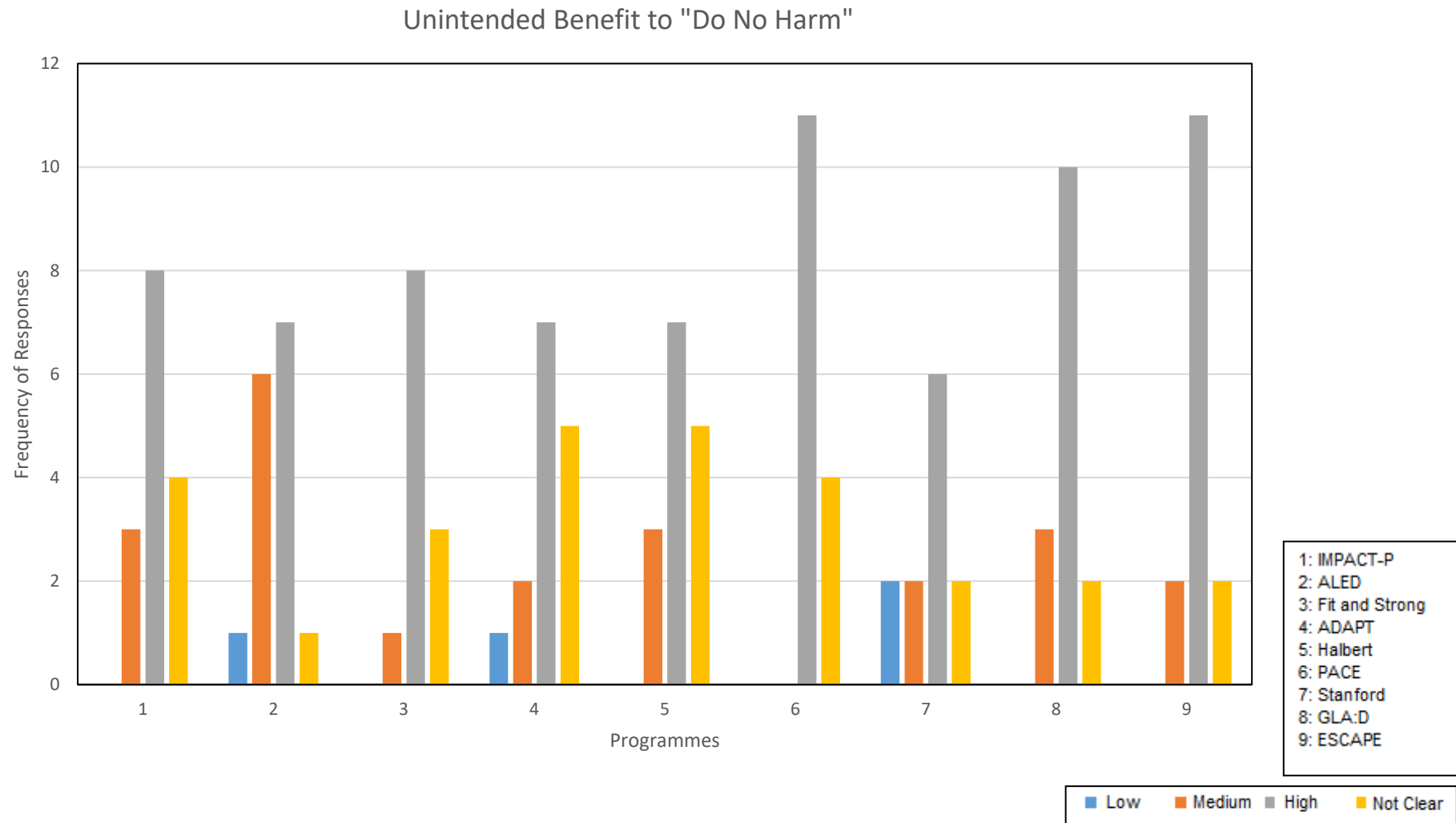


Figure 11.0: Results on unintended benefit “do no harm” criterion



Work Package 3: Consensus Discussion on Package of Care Recommendation

Methods

Members of the Expert Panel were invited to a face to face meeting on May 17 2016 in order to

- (a) Review the results of the ranking of interventions
- (b) Discuss issues around the evidence, implementation, sustainability and applicability to the UK population
- (c) Make recommendations as to which package of care should be supported

Issues identified to drive the recommendations

In the absence of a systematic synthesis of evidence, it was agreed that the recommendations would have to be based on the best evidence available in terms of effectiveness, implementation, sustainability and cost. Several other issues arose as to the implementation of programmes and what would be supported. The following was agreed:

- For adoption, the most likely programme to be supported would be on that was delivered by a physiotherapist or trained fitness instructor. Indeed, appropriately trained fitness instructors may offer additional benefits with skills around motivation and may be easier to access with the national shortage of physiotherapists. It was thought that lay volunteers may initially provide a barrier for implementation as some people with arthritis and GPs may not find them credible in the absence of clear evidence to the contrary;
- Training is essential in effective delivery. If fitness trainers were to deliver the package of care, there would need to be some type of accreditation;
- Sustainability is a key issue with little evidence for any of the packages: it was agreed there has been insufficient research into this. The number of face to face sessions a person has to attend and their personal circumstances need to be considered;
- The choice of package of care would need to be consistent with the wider political agenda to ensure adoption and uptake;
- The local of implementation needs to be considered in terms of uptake and impact on costs
- Most packages considered were targeted to mobile older people – i.e. those who can get to appointments. More needs to be done for those who are less mobile;
- To be effective the selected package should include a self-management, holistic approach (multi-morbidities, anxiety and depression) with strength, flexibility and aerobic activity included;

Feedback on the packages

As reported in Work Package 2, four studies were ranked above the others. In addition to the summary above, general comments on each of the four packages are presented below.

Fit and Strong was considered a good package, but it had too many interventions, which may be associated with the high dropout rates.



GLA:D, though not UK based, was considered a very good programme, particularly as it was astute to implement the package first in secondary care, but then transfer it to primary care where the greatest need is. But as there is only pilot data as current evidence, it could not yet be supported. Whilst there is some evidence of its implementation worldwide, this panel's decisions were to be underpinned by clinical and cost-effectiveness data from trials conducted in primary care. It is also a package designed for people with both hip and knee symptoms, as opposed to other packages which are directed to people with just hip or knee symptoms alone; however, the evidence base for its benefits in hip patients was currently lacking

The *Stanford Package* looks at chronic disease model, in a holistic manner with a focus on co-morbidities. Concern was expressed that there was repeated failure of uptake of this programme. It also has copyright issues which would be problematic in adoption. The lack of physical activity in the package was also considered to be less than ideal.

ESCAPE-pain was considered to be the strongest candidate. Whilst it was designed specifically for knee symptoms, it is based on a robust evidence base, was UK-developed and has been locally implemented in the NHS, has been trialled using fitness instructors as well as with physiotherapists and could be rolled out in primary, community and secondary care settings.

In summary, it is a targeted physical activity, with lifestyle advice which is key to reducing pain and improving function for people with osteoarthritis of the knee. The *ESCAPE-pain* programme is a package of care developed and evaluated in the UK which reduces pain, improves physical function, improves mental wellbeing and reduces healthcare and utilisation costs.

The *ESCAPE-pain* programme is recommended by this group because:

1. Is delivered to groups of 8 to 12 people in 12 classes, twice a week for six weeks;
2. Contains an education component where people learn about the problem, what might be causing it, why they experience pain, simple ways to cope and self-manage their problems
3. Includes an exercise regimen where people undertake a progressive exercise programme tailored to each person's needs and abilities;
4. Was originally designed to be delivered by physiotherapists in primary care, but could be developed to include delivery by a range of appropriately trained health professionals and fitness instructors in a variety of settings;
5. Has a robust evidence base to suggest that it is effective and sustainable, provides a benefit to the individual and delivers cost savings to the NHS.



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