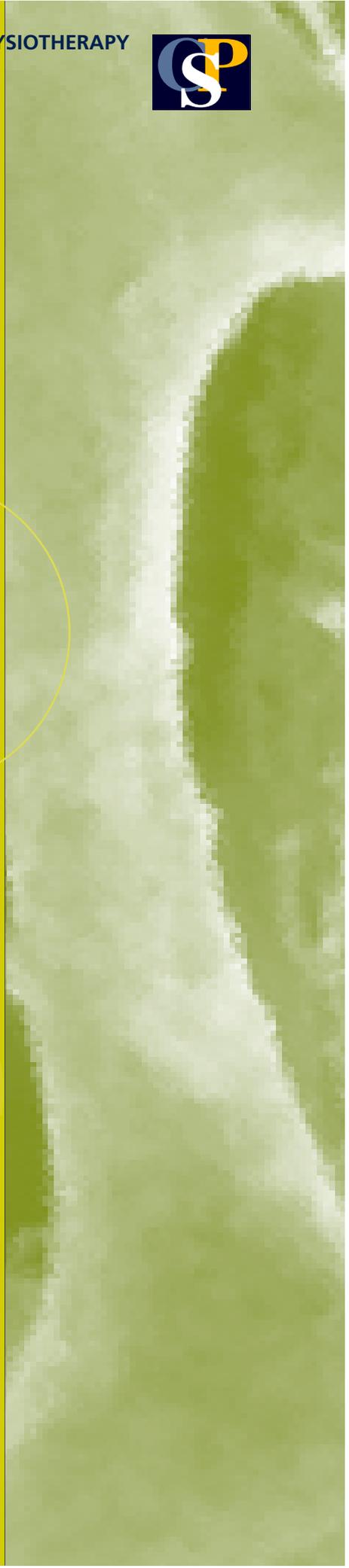




Osteoporosis audit pack

Physiotherapy

guidelines for the
management of
osteoporosis



vitamin d calcium metabolic loss off bone tissue
density foods fractures foods wrist spine hip
skeletal ageing health density balance prevention
strength 1 in 3 women 1 in 12 men fragile patient
care fall older people fruit rehabillatation
education break co-ordination exercise posture
walking architecture disease deterioration

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Foreword

1 in 3 women and 1 in 12 men over the age of 50 will develop osteoporosis. It is a condition characterised by a reduction in bone mass and density which increases the risk of fracture and is a major cause of disability. Almost half of all women experience an osteoporotic fracture by the age of 70 (Melton et al, 1992).

The natural bone stimulus for bone to maintain its functional strength is the loading which results from gravitational forces and the tensions exerted by muscular activity. Exercise, therefore, has a role in reducing the long term risk of developing osteoporotic fracture. Exercise also has a role in those with severe bone changes where the aim is predominantly to prevent fractures by improving muscle strength, exercise tolerance, balance and thereby reduce the risk of falling (CSP, 1999).

The National Service Framework for Older People (Department of Health, 2001) includes the assessment and management of osteoporosis within Standard 6: Falls. The National Service Framework highlights the nature and incidence of osteoporosis and the increased risk of fracture for those who fall with osteoporosis. One of the key interventions in meeting this standard is the prevention and treatment of osteoporosis through regular weight-bearing exercise.

The physiotherapy clinical guidelines for the management of osteoporosis provide evidence-based recommendations for the physiotherapy management of osteoporosis.

This audit pack provides a tool with which to compare actual practice with the recommendations in the guideline. Physiotherapists and others should use this tool to assure the quality and effectiveness of their services and thereby contribute to the reduction of osteoporosis and subsequent disability among those affected. The pack will form an important resource for services and individuals in evaluating their conformance with the National Service Framework

Claire Strickland MCSP

Chair of Council, The Chartered Society of Physiotherapy

Department of Health (2001) National Service Framework for Older People Department of Health, London.

Melton LJ 3rd et al (1992) Perspective. How many women have osteoporosis? Journal of Bone and Mineral Research. 7(9):1005-1010.



Introduction

In 1994 the World Health Organisation (WHO) defined osteoporosis as a disease characterised by low bone mass and microarchitectural deterioration of bone tissue, leading to increased bone fragility and a consequent increase in fracture risk. One in three women and one in twelve men over 50 years of age are affected. (Barlow et al, 1994).

In 1999, the Physiotherapy Guidelines for the Management of Osteoporosis (Mitchell et al, 1999) were published providing a framework and evidence-based recommendations for the effective physiotherapy management for those at risk from and those with a diagnosis of osteoporosis. The guideline is available from the Chartered Society of Physiotherapy and at www.csp.org.uk.

This audit pack is a comprehensive tool developed to assist local services in comparing actual clinical practice with the recommendations in the guideline. The data collection form and guidance notes have been developed in consultation with the original guideline development group and piloted on sites with a range of osteoporosis services. In addition to the areas audited through this tool it is recommended that other aspects of the service be evaluated, for example through the use of outcome measures and patient feedback. The pack includes a section on relevant outcome measures. A patient feedback form and suggested methodology for undertaking patient feedback can be found in The Standards of Physiotherapy Practice pack (CSP, 2000). All of the documents in this pack may be freely photocopied.

Evaluating healthcare is a major issue for all health care providers. Clinicians are under increasing pressure to demonstrate the value of the services they provide and clinical governance has further heightened the demand for information which will be used to inform service delivery improvements. It is hoped that participation in the audit will facilitate service development as audit has been shown to be an effective means of ensuring quality and effectiveness of services and assisting the implementation of guidelines.

Put simply, audit is a method of comparing what is actually happening in clinical practice against agreed standards or guidelines. Audit was introduced as a systematic method of improving the quality of patient care in the reforms of the NHS in 1989. The National Institute for Clinical Excellence (NICE) defines clinical audit as 'a quality improvement process that seeks to improve patient care and outcomes through systematic review of care against explicit criteria and the implementation of change' (NICE, 2002).



To ensure that an improvement in the quality of care arises as a result of the audit it is important that the audit process does not end once the data has been collected. The stages of evaluating the data, developing and implementing recommendations for change and subsequently undertaking a re-audit are essential to ensure actual clinical improvement. That is 'closing the loop' or completing the cycle. The information in this audit pack has been developed to reflect the cyclical process of audit.

Further references including a useful bibliography is included in the information paper Clinical Audit PA27 (CSP, 2002).



Guideline Recommendations

This section presents the recommendations made in the Physiotherapy Guidelines for the Management of Osteoporosis, (Mitchell et al, 1999). The section is here as an aide-memoire and to provide a clear rationale for the items in the data collection form. Reference should be made to the complete guideline document for the evidence, grading and to understand the recommendations.

The guideline divides the target client group into 3 broad categories. These symbols are used throughout the audit pack:

- Men and women who have been diagnosed with mild bone changes (osteopenia) and those with normal bone mass concerned with reducing the risk of osteoporosis
- Men and women who have been diagnosed with osteoporosis without any history of fracture
- ◆ A frailer group with more severe osteoporotic changes. This group mainly but not always comprises a more elderly population (both men and women). These patients may or may not have sustained one or more fractures
- ! Denotes caution
- ✓ Denotes good practice based on clinical experience as opposed to formal evidence

Physiotherapy Assessment

Once patients with a diagnosis of osteoporosis have been referred for physiotherapy, they should be correctly categorised and a detailed, standard physiotherapy assessment carried out to include the following items;

- ◆ Anthropometric and spinal mobility assessment to include:
 - Height
 - Weight
 - Chest expansion
 - Cervical/thoracic deformity
 - Shoulder elevation
- ◆ Lumbar spine range of movement
- Strength/endurance assessment
- ◆ Aerobic capacity assessment
- ◆ Balance assessment
- ◆ Functional assessment
- ◆ Pain assessment
- ◆ Analysis of assessment and outcomes



Physiotherapy Management

The management section deals firstly with the management of patients in each category, followed by sections on principles of treatment across all three groups.

■ Management for the osteopenic and prevention group

Aims

- Increase the peak bone mass in the at risk/preventative group
- Maintain or increase bone mass density (BMD) in the osteopenic and prevention group and reduce the early rapid bone loss after menopause
- Improve muscle strength, balance, cardiovascular fitness
- Improve posture
- Improve psychological well-being
- Provide education

Exercise management for bone health

- High impact exercise, e.g. skipping and jogging, has the greatest potential to improve BMD in pre-menopausal group, Grade A Level 1b
- Low to medium impact exercise, such as step aerobics, intermittent jogging is more appropriate for those not used to exercising and those over 50 years of age, Grade A Level 1b
- Integrate high impact with medium and/or low impact activities for a well- designed and safe programme. People should be instructed in the use of rebound techniques, i.e. give or bend in the knees on take off and landing ✓
- Strength training is useful in sedentary young individuals provided it is of a high enough intensity i.e. 70–80% 1RM. It not only improves strength, but is accompanied by improvements in BMD, Grade A Level 1b
- All exercise programmes should start at an easy level and be progressive in terms of intensity and impact, Grade C Level III

Precautions

All high impact exercise is inappropriate and unsafe if:

- ! People suffer from joint conditions
- ! People cannot perform exercise with correct technique i.e. unable to rebound effectively
- ! People with pelvic floor problems
- ! The design of the programme is unsafe, e.g. all of the exercise occurs on the spot, and if the programme does not incorporate medium and low impact exercise



● The osteoporotic group who have not sustained fractures

Aims

- Maintain bone strength
- Prevent fractures
- Improve muscle strength, balance, cardiovascular fitness
- Improve posture
- Improve psychological well-being
- Provide education
- Aim to reduce falls

Exercise management for bone health

- Strength training. It is advised that the overload principle is applied through a high load and low repetitions regime. Any form of strength training does require to be site specific i.e. targeting areas such as the muscle groups around the hip, quadriceps, dorsi-plantar flexors, rhomboids, wrist extensors and back extensors, Grade A Level 1b
- Weight bearing exercises should be targeted to loading bone sites predominantly affected by osteoporotic change i.e. hip, vertebrae and wrist, Grade B Level 2a
- Exercise should be used in combination with both adequate calcium intake and some type of hormone replacement therapy or other clinical therapy for maintaining and/or increasing bone mineral density in post-menopausal women at risk from osteoporosis, Grade A Level 1a
- All exercise programmes should start at an easy level and be progressive in terms of intensity and impact, Grade C Level III

Precautions

The following activities should be avoided:

- ! High impact exercise
- ! Trunk flexion
- ! Trunk rotational torsion movements with any loading
- ! Lifting
- ! The pelvic floor precautions listed for the osteopenic and prevention group, also apply

◆ Frailer group with more severe osteoporotic changes

Aims

- Falls reduction
- Prevention of further fractures
- Balance/co-ordination



Improvements in muscle strength, flexibility, aerobic capacity, posture

Gait re-education

Psychological well-being and increased confidence

Reduce/control pain

Exercise Management

- ◆ Exercise training must start at a very low intensity using low impact exercises ✓
- ◆ For strength training initially use very short levers or body resistance ✓
- ◆ Exercises that patients find difficult on dry land may be more easily carried out in water. For example, trunk extension will be impossible for some of these patients on dry land but can be achieved in water and resistance can gradually be increased ✓
- ◆ All exercise programmes should be progressive in terms of intensity and impact. A very gentle low impact programme using gravity and body resistance exercise is recommended, Grade C Level III

Precautions

- ! No high intensity exercise
- ! All the precautions listed for the osteopenic and prevention group and the osteoporotic group in the previous sections also apply to this group

Pain Management

The following modalities may be effective for osteoporosis and apply to all those with associated pain in any of the target groups.

- ◆ Hydrotherapy. Hydrotherapy should be considered as a treatment modality where the patient has pain from recent vertebral fractures, and/or postural and balance problems. Hydrotherapy is also a very useful modality to build confidence in very disabled people and those afraid of further falls ✓
- ◆ Transcutaneous Electrical Nerve Stimulation (TENS). TENS should be considered as a modality for the osteoporotic patient with intractable pain, especially those with chronic back pain and recent vertebral fractures, Grade A Level 1b ✓
- ◆ Interferential Therapy. The mechanism for pain relief is the same as for TENS
- ◆ Heat. Patients should be instructed on how to use heat therapy safely at home to relieve pain symptoms ✓
- ◆ Relaxation. The use of relaxation should be discussed with/offered to patients with osteoporotic intractable pain ✓



Treatment Principles

Balance and falls management

- ◆ A thorough falls risk assessment should be made and risk factors eliminated as far as possible ✓
- ◆ Some elements of Tai Chi could be incorporated into any exercise class but are especially effective for those elderly people where balance is a problem ✓
- ◆ Any activity that promotes co-ordination and balance appropriate to the severity of the disease should be encouraged, i.e. simple balance exercises such as supported one leg stands can be effective ✓
- ◆ The use of hydrotherapy is frequently indicated to reduce pain, and to provide a safe environment for balance exercises ✓

Posture and flexibility

- ◆ Back extension exercises are very important for this group. Kyphosis can often be improved as it is not totally dictated by the shape of the bones but also by muscle weakness and/or pain, Grade B Level IIa
- ◆ Back extension exercises can also be taught in the seated position for those unable to lie on their front ✓
- ◆ Exercises should concentrate on encouraging chest excursion, rhomboid exercises and balance ✓
- ◆ Gait re-education and appropriate walking aids may also be necessary ✓
- ◆ Stretching to improve flexibility should be part of every exercise programme for all of the client groups. Stretching of all the major upper and lower limb muscle groups should be carried out ✓
- ◆ Stretching should always be carried out following a warm-up period ✓
 - ! Ballistic stretching should always be avoided ✓

Exercise prescription

- As bone density changes due to weight-bearing exercise will not normally be detected before nine months, exercise programmes should be designed and structured to enable and motivate clients to continue indefinitely and exercise with moderate intensity five times per week. Once exercise programmes are discontinued the positive effects will be reversed, Grade A Level 1b



Psychology of exercise

- ◆ Encourage habitual aerobic type exercise (dry land or water) for psychological health benefits, Grade A Level 1b
- ◆ Adherence. A successful exercise programme, especially for an older population, should build on individuals' previous habits, tapping any skills that have been acquired. Above all, exercise must be seen to be personally rewarding ✓
- ◆ Promoting Habitual Exercise. Physiotherapists should forge links with local institutions (leisure and sports facilities) and possibly contribute to the training of fitness instructors in order to facilitate continuing safe and effective exercise provision for these subject groups outside the healthcare setting ✓

Potential harms and risks

- ◆ Fracture is the main risk factor for all the client groups !
- ◆ Exercises should not be high impact. Excessive rotational movements should be avoided as well as flexion exercises, as these have been shown to increase vertebral fractures !
- ◆ Care should be taken with the exercise tolerance of the individual. If the individual has a poor exercise tolerance test result, exercises should be gentle but still progressive !
- ◆ Forceful joint manipulation is contra-indicated when osteoporosis has been diagnosed !

Patient Education

- ◆ It is the role of the physiotherapist to:
 - Guide patients to understand the implications and risk factors associated with osteoporosis and to motivate them to become active participants in all aspects of the management of their condition ✓
 - Give lifestyle advice on lifting and handling, diet, posture and safe exercise/activity ✓
 - Encourage patients to achieve the correct balance between activity and rest and to set realistic individual goals, which will be dependent on the severity of their condition ✓
 - Make available to people additional information with regard to local self help groups, exercise classes in the community and the National Osteoporosis Society ✓
 - Liaise with other health care professionals such as dietitians, doctors, occupational therapists and specialist nurses ✓

Health Education

- ◆ Physiotherapists have a professional responsibility to promote exercise strategies for bone health for all age groups
- Physiotherapists should especially involve themselves in promoting the benefits of exercise to raise physical activity levels for young people and therefore achieve a high peak bone mass. They should aim to highlight the importance of prevention to all age groups ✓
- ◆ Lists of useful local information for sufferers should be available in physiotherapy departments ✓



Outcome measures

The authors of the guideline described several measures which they suggested would be useful in evaluating change or no change in this patient population. The following section provides some information about accessing these measures. The list is not exhaustive but exemplary, and is designed to assist in accessing the measure, rather than be an appraisal of each measure. As far as the CSP is aware the measures described are free to use, unless otherwise stated. Measures should not be modified without permission from the original authors. If a questionnaire is reproduced, full reference to the original article should be made. Some measures require specific equipment.

Aim of intervention	Name of measure	Acronym	References
Cervical / Thoracic Deformity	Tragus to Wall	-	Laurent MR, Buchanon WW, Bellamy N (1991) Methods of assessment used in Ankylosing Spondylitis clinical trials: A review. <i>British Journal of Rheumatology</i> . 30:326-329
Lumbar spine range of motion	Schober Extension	-	Moll JMH, Liyanage Sp, Wright V (1972) An objective clinical method to measure spinal extension. <i>Rheumatological Physical Medicine</i> . 11:507-511.
Strength / Endurance	Trunk Extension Endurance test	-	Toshikazu I, Shirado O, Suzuki H, Takahashi M, Kanedo K, Strax TE (1996) Lumbar trunk muscle endurance testing: An inexpensive alternative to a machine for evaluation. <i>Archives of Physical Medicine and Rehabilitation</i> . 77:75-79
	One Repetition Maximum method	1RM	Fiatarone MA, Marks EC, Ryan ND, Meredith CN, Lipfitz LA, Evans WJ (1990) High-intensity strength training in nonagenarians. Effects on skeletal muscle. <i>Journal of the American Medical Association</i> . 263, 22, 3029-3034
	Isometric, isotonic or isokinetic measurements	-	Nelson ME, Fiatarone MA, Morganti CM, Trice I, Greenburg RA, Evans WJ (1994) Effects of high intensity strength training on multiple risk factors for osteoporotic fractures. <i>Journal of the American Medical Association</i> . 272:1909-1914. Perrin DH (1993) Isokinetic exercise and assessment. <i>Human Kinetics Publishers</i> .
Aerobic Capacity	Submaximal Progressive Exercise test	-	American College of Sports Medicine. (1990) The recommended quality and quantity of exercise for developing cardiorespiratory and muscular fitness in adults. <i>Medicine and Science in Sport and Exercise</i> . 22:265-274



Distributor	Equipment required
Description in article	Tape measure
Description in article	Tape measure
Description in article	Tape measure
Description in article	Incremental ankle weights
Will depend on measure used.	Hand held dynamometer, isokinetic dynamometer.
Description in article	Cycle ergometer, heart rate monitor, stopwatch, formulae to work out predicted VO2 max



Outcome measures *continued*

Aim of intervention	Name of measure	Acronym	References
Aerobic Capacity <i>continued</i>	Adapted Shuttle Walking Test	ASWT	Singh SJ, Morgan SJ, Hardman AE, Rowe AE, Bardsley PA (1994) Comparison of oxygen uptake during a conventional treadmill test and the shuttle walking test in chronic airflow limitation. <i>European Respiratory Journal</i> . 11:7,2016-2020
	6 Minute Walk	6MW	Harada ND et al (1999) Mobility related function in older adults: assessment of the 6 minute walk. <i>Arch Phys Med Rehabil</i> . 15, 80, 837-841. Butland RJA et al (1982) Two-, six-, and 12-minute walking tests in respiratory disease. <i>British Medical Journal</i> . 284, 1607-1608
	Elderly Mobility Scale	EMS	Smith R (1994) Validation of the elderly mobility scale. <i>Physiotherapy</i> . 80:11, 744-747
	Timed Up and Go Test	TUAG	Podsiadlo D, Richardson S (1991) The Timed Up and Go: a test of basic functional mobility for frail elderly persons. <i>Journal of the American Geriatric Society</i> . 39:142-148
Balance	Timed One Legged Stand	-	Iverson BD, Gossman MR, Shaddeau SA, Turner ME (1990) Balance performance, force production, and activity levels in non institutionalised men 60-90 years of age. <i>Physical Therapy</i> . 70(6):348-55
	Functional Reach	FR	Duncan PW, Weiner DK, Chandler J, Studenski S (1990) Functional Reach: a new clinical measure of balance. <i>Journal of Gerontology</i> . 45, 6, M192-197.
	Tinetti Balance	POAM	Tinetti ME, Baker DI, McAvey G, Claus EB, Garrett P, Gottschalk PT, Koch ML, Trainor K, Horwitz RI (1994) A multifactorial intervention to reduce the risk of falling among elderly people living in the community. <i>The New England Journal of Medicine</i> . 331: 821-827.
Functional Assessment	Osteoporosis Functional Disability Questionnaire	OFDQ	Helmes E, Hodsmann A, Lazowski D, Bhardwaj A, Crilly R, Nichol P et al (1995) A questionnaire to evaluate disability in osteoporotic patients with vertebral compression fractures. <i>Journal of Gerontology A Biol Sci Med Sci</i> . 50 (2): M91-8.



Distributor	Equipment required
£25.00 from Dept Respiratory Medicine, Glenfield General Hospital, Leicester LE3 9QP	Two markers (e.g. cones), tape player and taped test, instruction leaflet, at least 10 metres walking space, a short range telemetry device to measure heart rate, stopwatch
Description in article	Two markers (e.g. cones), 20 metres apart, stopwatch
Description in article	Metre stick, 19 inch height chair, bed, 6 metre walkway, stopwatch
Description in article	Chair, stopwatch, cone
Description in article	Stopwatch
Description in article	Metre stick
Description in article	19 inch height chair
CSP - Library and information services. email: lis@csp.org.uk or 020 7306 6155	Nil



Outcome measures *continued*

Aim of intervention	Name of measure	Acronym	References
Functional Assessment <i>continued</i>	Timed Sit-to-Stand	-	Hirsch CH, Fried LP, Harris T, Fitzpatrick A, Enright P, Schultz R (1997) Correlates of performance-based measures of muscle function in the elderly: The Cardiovascular Health Study. <i>Journal of Gerontology</i> . 52(4): m192-200.
	Grip Strength	-	Hirsch CH, Fried LP, Harris T, Fitzpatrick A, Enright P, Schultz R (1997) Correlates of performance-based measures of muscle function in the elderly: The Cardiovascular Health Study. <i>Journal of Gerontology</i> . 52 (4) m192-200.
	Stair Climbing	-	Hirsch CH, Fried LP, Harris T, Fitzpatrick A, Enright P, Schultz R (1997) Correlates of performance-based measures of muscle function in the elderly: The Cardiovascular Health Study. <i>Journal of Gerontology</i> . 52 (4) m192-200.
	Osteoporosis Functional Disability Questionnaire	OFDQ	Helmes E, Hodsman A, Lazowski D, Bhardwaj A, Crilly R, Nichol P et al (1995) A questionnaire to evaluate disability in osteoporotic patients with vertebral compression fractures. <i>Journal of Gerontology A Biol Sci Med Sci</i> . 50 (2): M91-8
	20 metre timed walk	-	Hirsch CH, Fried LP, Harris T, Fitzpatrick A, Enright P, Schultz R (1997) Correlates of performance-based measures of muscle function in the elderly: The Cardiovascular Health Study. <i>Journal of Gerontology</i> . 52(4): m192-200
Pain	Visual Analogue Scale	VAS	Scott J, Huskisson EC (1976) Graphic representation of pain. <i>Pain</i> . 2:175-184
	McGill Pain Questionnaire	MPQ	Melzack R (1983) The McGill Pain Questionnaire In: <i>Pain measurement and assessment</i> . Ed. Melzack. New York, Raven Press. 41-46.
	Monitor daily analgesic intake	-	CSP Core Standard 5.1.f
	Osteoporosis Functional Disability Questionnaire (Pain Section)	OFDQ/P	Helmes E, Hodsman A, Lazowski D, Bhardwaj A, Crilly R Nichol P et al (1995) A questionnaire to evaluate disability in osteoporotic patients with vertebral compression fractures. <i>Journal of Gerontology A Biol Sci Med Sci</i> . 50, 2, M91-8.



Distributor	Equipment required
Description in article	19 inch height chair
Description in article	Hand held isometric dynamometer
Description in article	steps
CSP - Library and information services. email: lis@csp.org.uk or 020 7306 6155	Nil
Description in article	20 metre walkway, stopwatch
Description in article	Visual analogue scale
Description in article	Nil
-	Nil
CSP - Library and information services. email: lis@csp.org.uk or 020 7306 6155	Nil

Guidance on carrying out an audit

This section provides general guidance for carrying out an audit project. It has been written to reflect the cyclical nature of audit as a system for continuous improvement. Section V contains information specific to the osteoporosis audit regarding data collection and data analysis using the osteoporosis data collection form.

The audit process can be broken down as follows:

The people

1. Identify a project co-ordinator
2. Identify a project team
3. Identify a data collector

The project

4. Define the timescale
5. Agree inclusion criteria
6. Agree the method of sampling and sample size
7. Brief project participants

Data collection

8. Collect the records and relevant documents
9. Collect the data
10. Analyse the data and report the results

Clinical improvement

11. Present and discuss the results
12. Formulate and agree recommendations
13. Implement the recommendations
14. Re-audit
15. Feedback.

Stage 1 Identify a project co-ordinator

A project co-ordinator must be identified to manage the audit and to lead a small project team. The project co-ordinator may be a member of the audit staff or a therapist. If a therapist, this may be a member of staff who is undertaking the role of project coordinator as part of their annual objectives or continuing professional development.

The role of the project co-ordinator, in association with the project team, is to:

- Manage the project ensuring completion of each stage including the implementation of recommendations and re-audit

- Formulate the project plan prior to formal commencement of the project considering each stage of the project and involving and informing the relevant person(s) in the project team
- Provide a link between the project and the audit department
- Maintain the momentum of, and interest in, the project.

Stage 2 Identify a project team

A project team should be formed which will provide advice at each of the stages.

The project team should include the following:

- a physiotherapist directly involved with the service
- a manager to represent physiotherapists working with the target group
- the data collector
- the project team should consider the involvement of a consumer particularly during the development and implementation of the recommendations
- it may be appropriate to include another profession involved with delivering care to the target group, e.g. a dietitian
- a member of the clinical audit department in an advisory capacity.

Even if the clinical audit department are not directly involved with the project, it is still important that the local audit department is informed of the project as early as possible. They then have the opportunity to include the project within their work plan. They may still be able to offer advice and practical help on a range of issues such as sampling or analysing the data.

Note the clinical audit department may be known as a clinical audit, clinical governance or clinical effectiveness department, dependant on local circumstances. This document refers to clinical audit department as an all-encompassing term.

Stage 3 Identify a data collector(s)

The project coordinator should identify a data collector. The two will work closely throughout the project. If the project requires the interpretation of clinical case notes it will be helpful if the data collector is a physiotherapist. If the data collector is not a physiotherapist, for example if they are a member of the audit department, a physiotherapist will be required to assist the data collector during the data collection stage to interpret the evidence. To avoid bias and maintain objectivity the data collector should be a member of the therapy staff who did not complete the records and who is not directly involved with the delivery of the osteoporosis service.

The role of the data collector is to:

- Identify the patient records and documents to be sampled
- Take a sample of the records
- Collect the data using the data collection forms

- Analyse the data
- Liaise with the project coordinator on each of the above
- Liaise with the audit department on each of the above.

Stage 4 Define the timescale

Agree a timescale. This should include:

- Start and finish dates for the project overall
- Start and finish dates for the patient record identification. A minimum period of three months for the inclusion of records for data collection is recommended.

If the audit is prospective a recommended start date for the patient record selection is 6 months prior to the start date for the audit, to allow for most patients to have completed the episode of care. The method of prospective audits is particularly appropriate where the aim of the audit is to explore the implementation of new information.

Audit is retrospective where there is the collection of patient record information for patients who have already completed their episode of care. Retrospective audit is particularly appropriate to establish a baseline of activity prior to implementation of a guideline. A timescale should be selected for the inclusion of patient records.

Stage 5 Agree inclusion criteria

Criteria for the patients and records to be included in the audit should be agreed. For further information see Section V.

Stage 6 Agree the method of sampling and sample size

The project coordinator with the project team should decide on the sample size and sampling method. The data collector is responsible for taking the sample. See Section V for further information.

The sample size should be selected to reflect the distribution of the target group across the various clinical locations in the organisation and the variety of ways in which individual patients are managed. It is important that the method of selection is agreed and is adhered to by all parts of the service receiving referrals. If the data is being collected at more than one site, only by ensuring the same method for the sampling of patients, may comparisons be made between parts of the service.

At this stage some preliminary discussion should take place concerning the analysis of data (Stage 9). Recommended method for taking a sample:

- Decide a method to identify the records for inclusion; those patients who meet the inclusion criteria and began their episode of care during the timescale. If this is a prospective audit, it may be useful to place an identifier on relevant records at the time the patient is first seen in the episode
- Keep a register of, or put to one side, the records of every person who meets the inclusion criteria during the timescale
- Physiotherapy records from all locations in the organisation where the patients have been managed must be identified. These should all be included in the audit and their data collected on a single data collection form. A single episode of care for a patient may consist of more than one set of records if the patient is managed in a number of locations or if they have been seen by a number of staff who each hold their own notes. Alternatively, a single set of multiprofessional notes may be included which includes documentation from other professions such as medical or nursing staff
- Calculate the total number who meet the criteria, and who have been discharged within the timescale. Document this number
- From the total number take a sample. Depending on the number of cases the service handles, these may be consecutive, or, for example, every second or every fifth in consecutive order after discharge. If the total number is small, for example less than 20, include all the records collected.

Stage 7 Brief project participants

A briefing session led by the project coordinator should be held for all those involved with the project, including the data collector and the clinical staff delivering care.

The briefing session should include the following information:

- the guideline
- the project plan
- how the information from the audit will be used to improve clinical practice.

Stage 8 Collect the data

The data collector(s) should discuss the data collection form with the project team prior to collecting the data. It will be useful to discuss how the information in the data collection form can be found in the patient records, for example a standardised assessment form may have been developed locally. Section V provides guidance on completing the data collection form which will be useful during this discussion.

The following process should be followed by the data collector:

- Collect the records for each person who meets the inclusion criteria during the timescale
- Collect other documents relevant to the audit
- Take a sample (see Stage 6)
- The forms should remain anonymous.

Stage 9 Analyse the data

The data collector should undertake the data analysis to maintain objectivity and prevent bias. For further information refer to Section VI. Discussions on data analysis should be ongoing throughout this stage as suggestions for further analysis may be offered as trends arise.

During Stage 3 the data collector, the project coordinator and the project team should have discussed the following:

- The method for analysing the information collected from the records in Stage 8
- How the results should be presented, for example tables, pie or bar charts.

Stage 10 Present and discuss the results

A discussion about the results should be led by the project coordinator and include all those involved with the project; clinicians delivering care, the project team and the data collector. It would also be useful to involve all those whose work impacts upon the delivery of care to this group of patients, for example medical and nursing staff.

It is important the discussion takes place in a supportive and non-judgmental environment. It may be useful to refer to the guidance on Peer Review in the Physiotherapy Standards pack, available from the Chartered Society of Physiotherapy (CSP, 2000).

The aim of the discussion is to identify areas where actual clinical practice did not meet the recommendations in the guideline and to suggest reasons for this e.g. a need for staff training.

Stage 11 Formulate and agree recommendations

The recommendations should reflect areas from the analysis where actual clinical practice varied from that recommended in the guideline and from the discussions in Stage 10. In order to gain commitment from those responsible for implementing the recommendations, the relevant people should be involved in developing them. A table format is recommended to include:

- a statement of the recommendation
- who is responsible for each element of the implementation process.
- a timescale, where appropriate
- additional space for comments where required.

Stage 12 Implement the recommendations

To ensure effective implementation of the recommendations, the following stages should be included:

- Dissemination of the recommendations to all those involved with delivering care and to whom responsibility for implementing the recommendations is apportioned
- Consideration of methods for change management

- Writing and dissemination of an interim report to communicate a clear rationale for how the project was undertaken, the results, how the recommendations were developed and a date for the re-audit.

Stage 13 Re-audit

A re-audit should be undertaken following implementation of the recommendations. A minimum of 6 months is recommended following the initial audit prior to the re-audit to allow for implementation of the recommendations.

The results of the re-audit should be compared with the results from the initial audit and should demonstrate an improvement.

Stage 14 Feedback

This is the final stage of the project, which should include all those involved in Stage 10. Feedback should address the following areas:

- A comparison of the results of the initial audit and the re-audit
- Final report
- Qualitative information available identifying the reasons for non-compliance should be used at this stage
- Action taken in response to the recommendations
- The effects of the recommendations and the value of audit.

Report

Both the interim and final report should be written in the third person i.e. 'it is recommended that...' instead of 'I recommend...' or 'we recommend'. The following framework for an audit report is suggested:

Introduction

- the aims of the project
- the general question that the audit intended to answer. For example, Audit to compare actual clinical practice with the recommendations in the National Physiotherapy Guidelines for the Management of Osteoporosis

Methodology

How the audit was carried out, to include:

- the data collection form used
- the method for sampling

IV

- whether the audit was retrospective or prospective
- how the data was collected
- how the recommendations were developed.

Results

- Results from the audit and re-audit
- The change demonstrated by the re-audit
- Do not discuss the data here
- Present the data in tables and figures, highlighting key information in the tables within the accompanying text.

Discussion

- whether the results were biased in any way
- methodological problems with the study and whether it could be improved
- any problems in carrying out the project
- issues raised by implementing the recommendations
- whether any of the results were surprising and reasons for this.

Conclusion

- The effect of the audit and what conclusions can be drawn from the results
- Reference back to the aims and whether they have been achieved, for example reflect the way in which practice has changed or the recommendations have been implemented
- Further recommendations and a suggested date for a further re-audit.

Guidance on carrying out the osteoporosis audit

This section provides specific information on carrying out the osteoporosis audit and addresses the collection of data. Section IV provides general information on undertaking an audit project. The information in this section follows the structure of the data collection form. It will be useful to have the data collection form available whilst reading this section.

Stage 5 Inclusion criteria

The inclusion criteria should reflect the guideline for example; all patients referred to physiotherapy primarily for assessment and/or management of osteoporosis, osteopenia or prevention of osteoporosis.

In identifying these patients it would be useful to reflect the 3 categories into which the guideline separates the target client group.

Stage 6 Agree the method of sampling and sample size

All questions require documentary evidence. It is possible that, due to local protocols, the required information will not always be found in individual patient records. Documentation on service structure, records of exercise class content, written home exercise programmes and other written information provided to the patients, will be required. These documents will be used to form the documentary evidence required.

Stage 8 Collect the data

The data collection form consists of 5 parts; A, B1, B2, B3 and C. Parts A and parts B1, B2, B3 should remain anonymous. Where applicable guidance notes specific to the questions are in italics on the data collection form. A table summarising the components of the form is at the front of the data collection form in Section VI.

Section A Assessment

- Complete one Section A form for each patient included in the sample regardless of the category
- The descriptions and references of the measures in Questions 4 – 14 are contained in the guideline
- Section III of the audit pack includes further information on the use of outcome measures.

Section B1 Health promotion/ Category 1 patients

- Only one Section B1 form should be completed for the audit to address the management of all patients in Category 1



- Documentation on local protocols for service delivery will be required.

Section B2 Category 2 patients

- Use one Section B2 form for each patient in Category 2.

Section B3 Category 3 patients

- Use one Section B3 form for each patient in Category 3.

Section C Patient Identification record

- This form enables the original patient records to be traced if required
- To use this form allocate each patient a code and record the patients' identities on the Patient Identification Record
- As Part C contains identifiable patient information it should be stored stored securely as with other patient records.

Stage 9 Analyse the data

Data analysis need only be performed on the Yes/No criteria that reflect adherence to the guideline. The text answers can be used to help inform decisions about recommendations for change. Below are a number of examples of the way in which the data can be analysed and the results presented:

Example 1

The table that follows illustrates which items were measured at the initial assessment and, where there was no assessment, whether a reason was given.

Table to illustrate the percentage of assessment items documented at the initial assessment (n=24)

Item and Response	Yes		No, no reason given		No, reason given	
	Number	Frequency	Number	Frequency	Number	Frequency
Height	24	100%	0	0%	0	0%
Weight	24	100%	0	0%	0	0%
Chest expansion	22	92%	0	0%	2	8%
Shoulder Elevation	23	96%	0	0%	1	4%
Cervical/Thoracic deformity	22	92%	0	0%	2	8%
Lumbar spine ROM	22	92%	0	0%	2	8%
Strength/endurance	18	75%	4	17%	2	8%
Aerobic capacity	12	50%	11	46%	1	4%
Balance	23	96%	0	0%	1	4%
Function	12	50%	0	0%	12	50%
Pain	24	100%	0	0%	0	0%

Only 50% of patients were assessed on their functional ability. Where the item had not been assessed the following reasons were given; lack of space (aerobic capacity), patient had high blood pressure, patient could not lie prone (strength/endurance).

Example 2

There was no provision within the service for Target Group 1 patients (osteopenic and at risk) to be given advice on the benefit of appropriate exercise. In addition there was no provision within the service for Target Group 1 patients to be given information on appropriate community exercise opportunities. However, the service had established links with local exercise facilities as a list had been generated of suitable exercise classes at the local sports centre.

Example 3

The Tables illustrate the number of patients who reported pain, and the management provided for this. Pain was reported by 9 patients (n=15) and most (5) patients were reported to have adequate pain management and required no additional intervention. For those patients where pain had not been directly managed in this episode of care the following reasons were given; pain well controlled with home TENS, recently discharged from physiotherapy, no further intervention for pain required, advice on using heat at home for pain relief given.

Table to illustrate the proportion of Target Group 2 patients (osteoporosis, no fracture) where pain was reported and documented (n = 15).

Number n=15		Frequency
Yes	9	60%
No	6	40%

Table to illustrate the way in which pain was managed by those who reported (n = 9).

	Number n=9	Frequency
Transcutaneous Electrical Nerve Stimulation (TENS)	2	22%
Interferential Therapy	0	0%
Heat	0	0%
Complimentary therapies (acupuncture)	1	11%
No but reason given	5	56%
Remainder	1	11%
Total	9	100%

Example 4

Table to illustrate the number of Target Group 2 patients who received education on the recommended areas (n = 15).

	Number n=15	Frequency
Lifting and handling	15	100%
Diet	1	7%
Posture	15	100%
Safe exercises/activity to do at home	15	100%
Safe exercise/activity to do in sports centres	0	0%
Exercise opportunities in the local community	15	100%
The National Osteoporosis Society (NOS)	15	100%
Local NOS Support Group	15	100%

Data collection form

The data collection form includes 5 components.

Reference should be made to section V before completing this form.

Table to summarise the 5 components of the data collection form

A Assessment	One Section A form should be completed for each patient in the audit
<p>B1 Health promotion/ Category 1 patients. Those with normal bone mass concerned with reducing the risk of osteoporosis and people with mild bone changes, osteopenia.</p>	<p>Only one Section B.1 form should be completed for all of the patients in this category as this form addresses service delivery. This information will probably be found in the service protocols.</p>
<p>B2 Management of Category 2 patients. People with a clinical diagnosis of osteoporosis without any history of fracture.</p>	<p>One section B2 form should be completed for each patient identified as Category 2.</p>
<p>B3 Management of Category 3 patients. A frailer group with advance bone changes usually having sustained fractures.</p>	<p>One B3 form should be completed for each patient identified as Category 3.</p>
<p>C Patient identification record, to enable the original patient records to be traced if required.</p>	<p>Use this form to document all patients included in the audit. Allocate each patient a code and record the patients' identities on the Patient Identification Record, which should be stored securely as with other patient records.</p>



Section A - Assessment

Complete one form for each patient

Patient Identification Code:

Details of person completing section:

Name: _____

Job title: _____ Department: _____

Date form completed: - -

1. Date of first contact with patient: - -
(For this episode of care)

2. What was this patient's category?
(Information may be found in DEXA scan report or past medical history).

- At risk of osteoporosis and osteopenia** Category 1
(Complete one Section B1 for all patients in this category)
- Osteoporosis, no previous fracture related to osteoporosis** Category 2
(Complete one Section B2 for each patient in this category)
- Osteoporosis, advanced bone changes / previous fracture** Category 3
(Complete one Section B3 for each patient in this category)
- If 'unsure' of category, complete section A only Unsure

3. Were the following items documented in the patient record as part of the initial assessment? For each item please indicate if the example or recommended measure was used

3.1. Height

Recommended measure - centimetres

- Was height assessed? Yes No
- If no, was the reason documented? Yes No

What was the reason stated: _____

3.2. Weight

Recommended measure - kilograms

- Was weight assessed? Yes No
- If no, was the reason documented? Yes No

What was the reason stated: _____

3.3. Chest expansion

Recommended measure - chest excursion at xiphisternum

- Was chest expansion assessed? Yes No
- If no, was the reason documented? Yes No

What was the reason stated: _____

3.4 Cervical / Thoracic Deformity

Recommended measure - Tragus to Wall

- Was cervical / thoracic deformity assessed? Yes No
- If no, was the reason documented? Yes No
- Was another measure used? Yes No

Please specify alternative measure used: _____

3.5 Shoulder elevation

Yes No

- Was shoulder elevation assessed?
- If no, was the reason documented?
- What was the reason stated: _____

3.6 Lumbar spine range of motion

Recommended measure - Schober Extension

- Was lumbar spine range of motion assessed?
- If no, was the reason documented?
- Was another measure used?
- Please specify alternative measure used: _____

4. Were the following items documented in the patient's record as part of the initial assessment?

For each item please indicate if the suggested measure or an alternative measure was used.

4.1 Strength / Endurance

Yes No

Suggested measures:

- Trunk Extension Endurance measure
- One Repetition, Maximum (1RM) method
- Isometric, isotonic or isokinetic measurements

- Suggested measure used?
- If no, was the reason documented?
- Was another measure used?
- Please specify alternative measure used: _____

4.2 Aerobic Capacity

Yes No

Suggested measures:

- Submaximal Progressive Exercise measure using a treadmill or cycle
- Adapted Shuttle Walking Test
- Elderly Mobility Scale
- Timed Up and Go Test
- Balance

- Suggested measure used?
- If no, was the reason documented?
- Was another measure used?
- Please specify alternative measure used: _____

4.3 Balance

Suggested measures:

- Timed One Legged Stand
- Performance Orientated Assessment of Movement (Balance section)

	Yes	No
Suggested measure used?	<input type="checkbox"/>	<input type="checkbox"/>
If no, was the reason documented?	<input type="checkbox"/>	<input type="checkbox"/>
Was another measure used?	<input type="checkbox"/>	<input type="checkbox"/>
Please specify alternative measure used: _____		

4.4 Functional Assessment

	Yes	No
Suggested measures:		
• Osteoporosis Functional Disability Questionnaire (OFDQ)		
• Timed Sit-to-Stand		
• Grip Strength		
• Stair Climbing		
• 20 metre timed walk		
Suggested measure used?	<input type="checkbox"/>	<input type="checkbox"/>
If no, was the reason documented?	<input type="checkbox"/>	<input type="checkbox"/>
Was another measure used?	<input type="checkbox"/>	<input type="checkbox"/>
Please specify alternative measure used: _____		

4.5 Pain

	Yes	No
Suggested measures:		
• Visual Analogue Scale		
• McGill Pain Questionnaire		
• Monitor daily analgesic intake		
• Osteoporosis Functional Disability Questionnaire, Pain Section (OFDQ)		
Suggested measure used?	<input type="checkbox"/>	<input type="checkbox"/>
If no, was the reason documented?	<input type="checkbox"/>	<input type="checkbox"/>
Was another measure used?	<input type="checkbox"/>	<input type="checkbox"/>
Please specify alternative measure used: _____		

5 Is there evidence that the following items were reassessed, using the same measure

	Yes	No
5.1. Height	<input type="checkbox"/>	<input type="checkbox"/>
5.2. Weight	<input type="checkbox"/>	<input type="checkbox"/>
5.3. Chest expansion	<input type="checkbox"/>	<input type="checkbox"/>
5.4. Shoulder elevation	<input type="checkbox"/>	<input type="checkbox"/>
5.5. Cervical/Thoracic deformity	<input type="checkbox"/>	<input type="checkbox"/>
5.6. Lumbar spine range of motion	<input type="checkbox"/>	<input type="checkbox"/>
5.7. Strength/Endurance	<input type="checkbox"/>	<input type="checkbox"/>
5.8. Aerobic capacity	<input type="checkbox"/>	<input type="checkbox"/>
5.9. Balance	<input type="checkbox"/>	<input type="checkbox"/>
5.10. Functional assessment	<input type="checkbox"/>	<input type="checkbox"/>
5.11. Pain	<input type="checkbox"/>	<input type="checkbox"/>
If no for any of the above, was the reason documented?	<input type="checkbox"/>	<input type="checkbox"/>
What was the reason stated? _____		



Section B1 - Health promotion / Category 1 Patients

Complete one form B1 for the whole audit

Details of person completing section:

Name: _____

Job title: _____ Department: _____

Date form completed: - -

Information may be found in local protocols for service delivery

- | | Yes | No |
|--|--------------------------|--------------------------|
| 1. Is there provision within the service for Category 1 patients (osteopenic and prevention group) to be given advice on the benefit of medium to high impact, weight-bearing exercise and strength training activity? | <input type="checkbox"/> | <input type="checkbox"/> |
| 2. Is there provision within the service for Category 1 patients to be given information on appropriate community exercise opportunities? | <input type="checkbox"/> | <input type="checkbox"/> |
| 3. Has the service made links with local institutions e.g. leisure and sports facilities, to facilitate continuing exercise provision? | <input type="checkbox"/> | <input type="checkbox"/> |



Section B2 - Management of Category 2 Patients

Complete one form for **each** Category 2 Patient

Patient Identification Code:

Details of person completing section:

Name: _____

Job title: _____ Department: _____

Date form completed: - -

1.1 Is there evidence from the patient record that pain was identified as a problem? **Yes** **No**

1.2 If yes, please indicate if any of the following physiotherapy interventions were offered? **Yes** **No**

- Hydrotherapy
 - Transcutaneous Electrical Nerve Stimulation (TENS)
 - Interferential Therapy
 - Advice on the use of heat therapy at home
 - Relaxation
 - Complementary Therapies
- If no, was the reason stated?
- What was the reason given : _____

2. Is there evidence that the patient was offered:

2.1 Low impact weight-bearing aerobic exercise programme? **Yes** **No**

Either individually or in a group, supervised or at home, using standing activities, where there is always at least one foot on the ground.

If no, was the reason stated?

What was the reason given: _____

2.2 Strengthening exercise programme? **Yes** **No**

Either body resisted or using sufficient weights to produce strength gains, either supervised or at home, aimed at improving the muscle strength of the patient.

If no, was the reason stated?

What was the reason given : _____

3. Did the patient participate in the exercise programme offered? Yes No

If no, go to question 6.

4. From the documentary evidence, state if the following components were incorporated into the patient's exercise programme:

Tick Yes only if there is evidence that the component was included and state the exercise or activity that would have achieved it. The evidence may be found in the individual patient record, class content records, or written home exercise documents that were given to the patient.

Yes No If yes, please state exercise/ activity:

Weight bearing exercises

4.1 targeted towards hips _____

4.2 targeted towards vertebrae _____

4.3 targeted towards wrists _____

Strengthening exercises

4.4 for muscles around the hip _____

4.5 for the quadriceps _____

4.6 for dorsi/plantar flexors _____

4.7 for the rhomboids _____

4.8 for the wrist extensors _____

4.9 for the back extensors _____

Co-ordination and balance

4.10 activities to promote co-ordination and balance _____

Stretching exercises

4.11 focusing on the thoracic and cervical spine _____

4.12 for the major upper limb muscle groups _____

4.13 for the major lower limb muscle groups _____

5. Is there evidence that advice and information on long-term continuation of appropriate exercise was given? Yes No N/A

If the programme is continuing, tick N/A

Yes No

6. Is there evidence that the patient was given advice on the following areas?

Evidence may be found in the patient case notes and class content records

- | | | |
|---|--------------------------|--------------------------|
| 6.1 Lifting and handling | <input type="checkbox"/> | <input type="checkbox"/> |
| 6.2 Diet | <input type="checkbox"/> | <input type="checkbox"/> |
| 6.3 Posture | <input type="checkbox"/> | <input type="checkbox"/> |
| 6.4 Safe exercise/activity to do at home | <input type="checkbox"/> | <input type="checkbox"/> |
| 6.5 Safe exercise/activity to do in sports centres | <input type="checkbox"/> | <input type="checkbox"/> |
| 6.6 Exercise opportunities in the local community | <input type="checkbox"/> | <input type="checkbox"/> |
| 6.7 The National Osteoporosis Society (NOS) | <input type="checkbox"/> | <input type="checkbox"/> |
| 6.8 Local NOS Support Groups | <input type="checkbox"/> | <input type="checkbox"/> |

Yes No

7. Is there evidence that the patient was provided with written information on:

Refer to the patient case notes, class content records or the contents of booklets or information sheets given to the patient

- | | | |
|---|--------------------------|--------------------------|
| 7.1 Lifting and handling | <input type="checkbox"/> | <input type="checkbox"/> |
| 7.2 Diet | <input type="checkbox"/> | <input type="checkbox"/> |
| 7.3 Posture | <input type="checkbox"/> | <input type="checkbox"/> |
| 7.4 Safe exercise/activity to do at home | <input type="checkbox"/> | <input type="checkbox"/> |
| 7.5 Safe exercise/activity to do in sports centres | <input type="checkbox"/> | <input type="checkbox"/> |
| 7.6 Exercise opportunities in the local community | <input type="checkbox"/> | <input type="checkbox"/> |
| 7.7 The NOS | <input type="checkbox"/> | <input type="checkbox"/> |
| 7.8 Local NOS Support Groups | <input type="checkbox"/> | <input type="checkbox"/> |



Section B3 - Management of Category 3 Patients

Complete one form for **each** Category 3 Patient

Patient Identification Code:

Details of person completing section:

Name: _____

Job title: _____ Department: _____

Date form completed: - -

1.1 Is there evidence from the patient's records that pain was identified as a problem? **Yes** **No**

1.2 If yes, please indicate if one of the following physiotherapy interventions were offered: **Yes** **No**

- Hydrotherapy
- Transcutaneous Electrical Nerve Stimulation (TENS)
- Interferential Therapy
- Advice on the use of heat therapy at home
- Complementary Therapies

If none of these intervention was offered, was the reason stated?

If a reason was given, what was the reason: _____

2. Is there evidence that the patient was offered: **Yes** **No**

2.1 Low impact weight-bearing aerobic exercise programme?

Either individually or in a group, supervised or at home, using standing activities, where there is always at least one foot on the ground. Patient feedback form.

If no, was the reason stated?

If a reason was given, what was the reason: _____

2.2 Strengthening exercise programme?

Either body resisted or using sufficient weights to produce strength gains, either supervised or at home, aimed at improving the muscle strength of the patient.

If no, was the reason stated?

If a reason was given, what was the reason: _____

3. Did the patient participate in any of the exercise programmes offered? **Yes** **No**

If no, go to Section 6

4. From the documentary evidence, which of the following components were incorporated into the patient's exercise programme?

Tick Yes only if there is evidence that the component was included and state the exercise or activity that would have achieved it. The evidence may be from the individual patient's records, class content records, or written home exercise documents that were given to the patient

	Yes	No	If yes, please state exercise/ activity:
4.1 Activity that promotes co-ordination and balance	<input type="checkbox"/>	<input type="checkbox"/>	_____
4.2 Stretching exercises focusing on the thoracic and cervical spine	<input type="checkbox"/>	<input type="checkbox"/>	_____
4.3 Stretches for the major upper limb muscle groups	<input type="checkbox"/>	<input type="checkbox"/>	_____
4.4 Stretches for the major lower limb muscle groups	<input type="checkbox"/>	<input type="checkbox"/>	_____

5. Is there evidence that advice and information on long-term continuation of appropriate exercise was given? Yes No N/A

If the programme is continuing, tick N/A

6. Is there evidence that the patient was given advice on:

Refer to the patient case notes and class content records

	Yes	No
6.1 Diet	<input type="checkbox"/>	<input type="checkbox"/>
6.2 Lifting and handling	<input type="checkbox"/>	<input type="checkbox"/>
6.3 Posture	<input type="checkbox"/>	<input type="checkbox"/>
6.4 Safe exercise/activity to do at home	<input type="checkbox"/>	<input type="checkbox"/>
6.5 Safe exercise/activity to do in sports centres	<input type="checkbox"/>	<input type="checkbox"/>
6.6 Exercise opportunities in the local community	<input type="checkbox"/>	<input type="checkbox"/>
6.7 The National Osteoporosis Society (NOS)	<input type="checkbox"/>	<input type="checkbox"/>
6.8 Local NOS Support Groups	<input type="checkbox"/>	<input type="checkbox"/>

7. Is there evidence that the patient was provided with written information on:

Refer to the contents of booklets or information sheets given to the patient.

	Yes	No
7.1 Lifting and handling	<input type="checkbox"/>	<input type="checkbox"/>
7.2 Diet	<input type="checkbox"/>	<input type="checkbox"/>
7.3 Posture	<input type="checkbox"/>	<input type="checkbox"/>
7.4 Safe exercise/activity to do at home	<input type="checkbox"/>	<input type="checkbox"/>
7.5 Safe exercise/activity to do in sports centres	<input type="checkbox"/>	<input type="checkbox"/>
7.6 Exercise opportunities in the local community	<input type="checkbox"/>	<input type="checkbox"/>
7.7 The NOS	<input type="checkbox"/>	<input type="checkbox"/>
7.8 Local NOS Support Groups	<input type="checkbox"/>	<input type="checkbox"/>

References

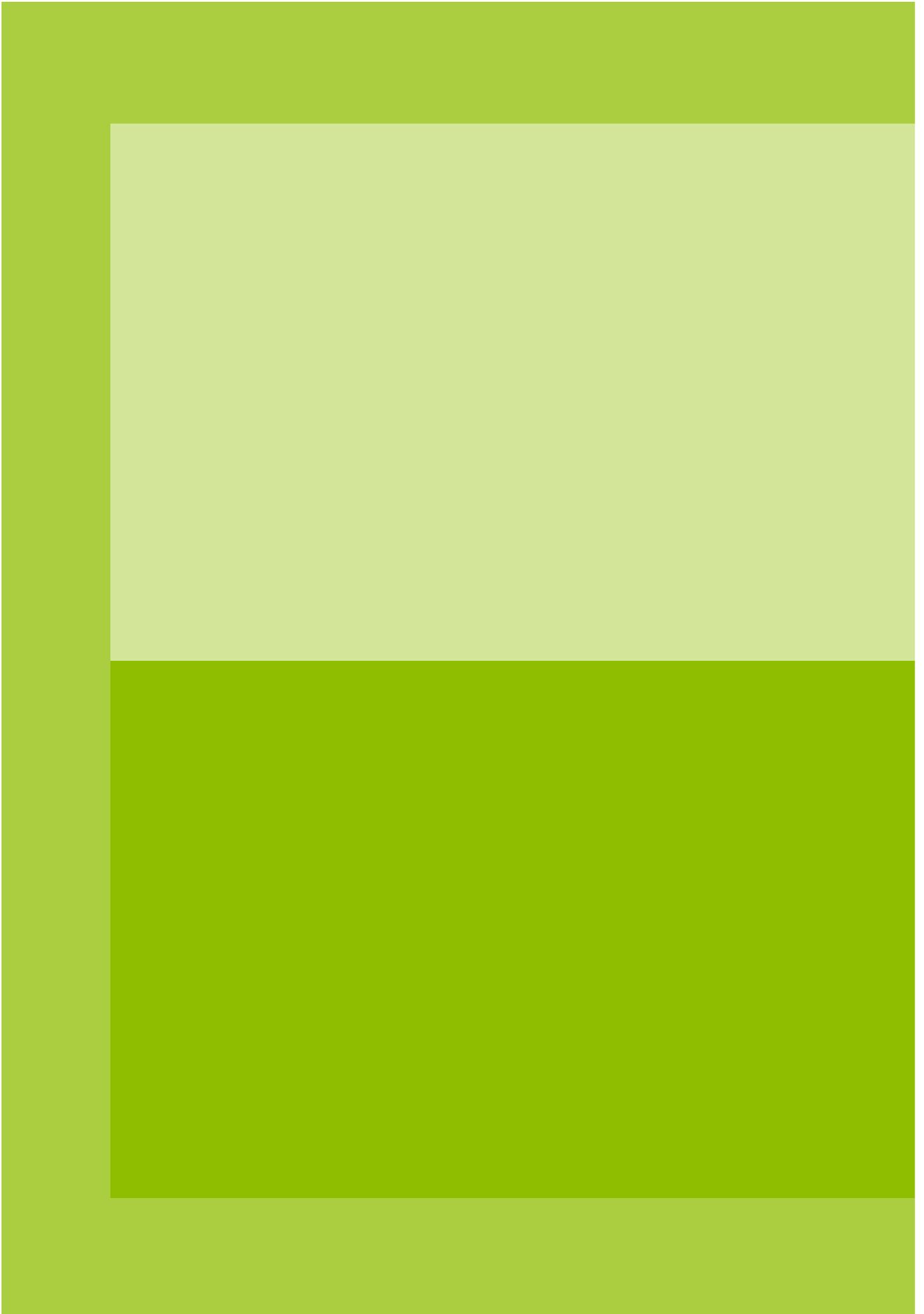
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care fall older people fruit rehabillatation
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