

Physiotherapy Guidance Notes for Exercise and Physical Activity in Adult Patients with Anorexia and Bulimia Nervosa

Judith Bentley, MSc, MCSP
Patricia Caddy, MCSP
Lynn Hammond, MCSP
Yvonne Hull, MCSP
Maggie Ward, MCSP

Lynn Hammond has been the physiotherapist with the Vincent Square Clinic, London from 1990 to the present time and can be contacted on lynn.hammond@nhs.net

Yvonne Hull is the physiotherapist with the Eating Disorder Service, Bristol from 2000 to the present time and can be contacted on yvonne.hull@awp.nhs.uk

Maggie Ward has provided the physiotherapy input to the Kinver Centre, St. Georges Hospital, Stafford since 2002

Judith Bentley is now retired but was the physiotherapist for St Andrews Healthcare Eating Disorder Unit and can be contacted at judithbentley@hotmail.co.uk

Patricia Caddy was the physiotherapist for the Eating Disorder Service at Addenbrookes Hospital, Cambridge from the late 1980's until her retirement in 2009

Table of contents

1. Aim and Scope of this Publication	2
2. Physiological and Psychological Benefits of Exercise.....	3
3. Specific Risks.....	4
4. The Assessment	5
5. Excessive Exercise and Activities.....	6
6. Strategies to Reduce Excessive Exercising Behaviour.....	7
7. BMI Related Guidelines.....	8
8. Education and Advice.....	9
9. References.....	10
Appendix: Exercise Behaviour Assessment Tool	12

1. Aim and Scope of this Publication

Aim

Inappropriate exercise behaviour is a common feature in patients with an eating disorder. These guidelines for Good Practice address excessive or over-exercise behaviour and also its management. The guidelines also make recommendations regarding healthy exercise and activity levels for all stages of the illness/recovery.

Scope

These guidelines are written primarily for Physiotherapists who encounter patients with anorexia or bulimia nervosa.

The authors are a group of physiotherapists who are keen to share their wealth of experience and common practice working in the field of eating disorders.

A Physiotherapist has the knowledge and skills necessary to: assess and make recommendations on appropriate levels of physical activity and exercise within the context of a healthy lifestyle, help the patient to manage their exercise and activity levels and to advise on and treat any neuro-musculo-skeletal problems that may arise.

Note on terminology

It should be recognised that the term physical activity includes:

- Activities of daily living
- Occupational activities
- Recreational activities
- Play
- Sport
- Exercise

2. Physiological and Psychological Benefits of Exercise

There is now worldwide acceptance among medical authorities that physical activity is an important measure of healthy living. It is also an effective therapy for many conditions, but the strongest effects are seen in the prevention of many common diseases, including cancer, stroke, heart disease, osteoporosis and type 2 diabetes. The critical message is that health benefits from physical activity occur concurrently across virtually the full range of diseases. (Department of Health 2004)

In addition to physical health benefits, those who engage in exercise frequently report a sense of well-being. More recently several academic books, consensus documents, reviews and studies have given weight to these anecdotal accounts and demonstrated that exercise can promote psychological benefits and, in some conditions, improve mental health (Acevedo & Ekkekakis, 2006; Biddle et al., 2000; Biddle & Mutrie 2008; Craft & Landers, 1998; Daley, 2002; Donaghy, 2007; Faulkner & Biddle, 2001; Faulkner & Taylor, 2005; Martinsen, 1995; Martinsen & Stephens, 1994; Mutrie, 1998; Thien & Thomas et al., 2000). The dilemma, therefore, when treating someone with an eating disorder is how to obtain the desired psychological and physical benefits without encouraging dysfunctional, excessive exercise behaviour or counteracting the necessary programme of weight gain.

The Department of Health recommends 30 minutes a day of at least moderate intensity physical activity on five or more days of the week for the general population (Department of Health 2004). For the majority of people the most acceptable and easiest forms of physical activity are those that can be incorporated into everyday life, for example, walking, cycling, gardening, housework.

Whilst this current advice is applicable to the majority of the population, there are significant risks to someone with an eating disorder. This document will suggest appropriate forms of exercise and give guidance on when it is safe to progress activity levels.

A common concern, which can interfere with compliance during weight restoration treatment programmes, is weight distribution during the restorative process. Studies have shown significant central fat accumulation with spontaneous weight gain in women with anorexia nervosa. This gives credence to the anecdotal reports of so many patients that, *"It's all going to my stomach"*. Trunk fat accumulation is most pronounced in those patients with the greatest increases in the concentration of the stress hormone, cortisol. Addressing body image issues in conjunction with exercises that target the abdominal area, for example, core stability work may help the patient to continue with weight restoration because the professionals are acknowledging and thus, not denying, that central fat accumulation can occur, especially in the early stages (Grinspoon et al., 2001; Mayer, 2001).

3. Specific Risks

3. i Osteoporosis:

Osteoporosis is a common complication of anorexia nervosa, in both females and males, due to low body weight. Amenorrhoea, caused by low levels of oestrogen, predisposes women to low bone density and therefore to the development of osteoporosis. As anorexia often occurs when peak bone mass is being acquired, many patients never reach optimum bone density. Even several years after recovery from anorexia nervosa, bone density may not increase to the normal range and consequently former patients remain at increased risk of painful fractures, kyphosis, loss of height and morbidity.

Significant bone loss does not usually occur within the first year of anorexia nervosa and so might not be evident on screening, but, thereafter, it is considered good practice that all patients should be offered a DEXA bone density scan (Mehler, 2003). However, some studies suggest that more than 50% of female patients with anorexia nervosa develop osteoporosis and severe bone loss can occur in patients who have had anorexia nervosa for less than a year (Madhusmita et al., 2002). Although exercise is known to have a beneficial effect on bone mineral density at a healthy weight, studies are conflicting and it cannot be said that exercise in those with anorexia nervosa is beneficial to bone density. If exercise contributes to further weight loss then the overall result will be detrimental to bone density (Mehler, 2003). Weight restoration is key in restoring bone mass. However, if it is felt that a planned exercise programme will help to encourage patients to engage with weight gain and, as long as the weight gain is occurring at a required rate, exercise is appropriate and should be allowed (Hausenblas et al. 2008). In a study undertaken in normal weight patients with Bulimia Nervosa, physical exercise was found to be more effective than CBT in reducing the pursuit of thinness (Sundgot-Borgen et al. 2002). It has been shown that in an inpatient unit for anorexic women, those who were assigned to an exercise programme gained more than one third more weight than the control group who did not exercise. Also the women in the exercise group demonstrated significantly reduced obligatory attitudes to exercise (Calogero & Pedrotty, 2004) and patients often presented with a more relaxed attitude to treatment when they were engaged in a physical activity for some of the time (Carraro et al, 1998).

Any patient with osteoporosis should be advised against high impact exercise such as jumping, running, contact sports, horse riding, and any sport that may result in falling, such as ice-skating (NICE 2004).

It is helpful to have an understanding of DEXA scan results.

3.ii Hypokalaemia: (low potassium)

Hypokalaemia, which is a result of dehydration and electrolyte imbalance, is caused by dieting, vomiting, laxative or diuretic abuse and a decrease in fluid intake. It can result in arrhythmias of the heart, heart failure, muscle weakness and loss of muscle tone. If a patient is deemed to be at risk of hypokalaemia, potassium levels must be monitored regularly and if the potassium level is abnormal the patient should not be exercising.

4. The Assessment

In addition to carrying out a routine physiotherapy assessment for participation in exercise, it is essential to consider specific risks and the patient's BMI. Patients' self reports are not always reliable so it is important to re-assess the risks regularly as each individual's condition might change rapidly.

The following table sets out the points to consider:

System	Common Signs and Symptoms	Possible Causes
Musculoskeletal	Osteoporosis/Osteopaenia	Low oestrogen levels in women and low testosterone levels in men
	Stress Fracture	Walking and running in the presence of osteoporosis/osteopaenia
	Soft Tissue Injuries	Muscle wasting and weakness due to low weight and excessive exercise
	Postural Problems	Muscle wasting and weakness Depression
Nervous System	Peripheral Neuropathy e.g. Foot Drop, Altered Gait	Vitamin B12 deficiency
Cardiovascular/ Circulation	Hypotension	Heart muscle shrinkage and wasting
	Dizziness/Syncope/Fainting	Heart muscle shrinkage and wasting
	Bradycardia	Electrolyte imbalance due to: <ul style="list-style-type: none"> • Vomiting • Laxative or diuretic abuse • Water loading or dehydration
	Arrhythmias	
	Heart Failure	
Oedema		

In addition, consideration should always be given to the effects of medication.

A physical assessment cannot stand alone and attitudes towards exercise also need to be explored. The Exercise Behaviour Assessment Tool can be used in these circumstances. The tool is used to explore the complexity of why a patient over-exercises, in order to challenge unhelpful thinking and behaviours and guide individual activity programmes. It has been adapted by the authors over time from unknown sources. (See Appendix)

A physical activity diary can be useful to demonstrate the amount and type of activity and exercise undertaken, raising awareness of possible areas for change. An example can be found in the NHS Health Trainer Handbook. (Department of Health 2008)

5. Excessive Exercise and Activities

Exercise is deemed to be excessive when its postponement is accompanied by intense guilt or when it is undertaken solely to influence weight or shape (Mond et al., 2006).

Exercise problems can be categorised in three ways:

5. i Overt exercising

Some patients openly and deliberately engage in exercise to burn off calories and induce weight loss. It is usually in the form of strenuous high cardiovascular activity for example, swimming, cycling, running. Typically it is solitary and undertaken in a rigid, obsessive manner.

5. ii Covert exercising

Some patients may undertake rigid strenuous activities in secret, for example, star jumps or sit-ups behind closed doors. For others, the activity takes the form of going up and down stairs frequently on the pretext of fetching things; getting off public transport early and walking the rest of the way; and less obvious ways, such as adopting a position in a chair that expends more energy, maintaining constant muscle contractions or by pacing and excessive standing.

5. iii Persistent restlessness

This is another kind of over activity prevalent in severely emaciated patients. It is often associated with sleep disturbances and can appear to be beyond voluntary control. The movements are highly repetitious and constant, for example, tapping, pacing and rocking.

Patients who do undertake excessive exercising may engage in one, two or all of the three categories described above.

Signs and symptoms of excessive exercise to look for are:

Unexplained injuries

Joint pain

Bruising

Friction burns

Stress fractures

Muscular and ligament injuries

6. Strategies to Reduce Excessive Exercising Behaviour

Although patients might find exercise helps with the weight restoration process, excessive exercise is always counter-productive to its success.

Excessive exercise may be a problem for patients at any stage of recovery. Various strategies may be used to help the patient to stop or reduce the inclination to over-exercise. Increasing support, for example, through constant observation for a short period of time to prohibit over-exercising, may not only break the habit, but also appease the guilt. Patients often report that they feel a sense of relief, as they now have an excuse to give up the over-exercising which they had felt compelled to do.

It has been found that adopting a motivational stance is helpful in treating individuals with eating disorders and also in encouraging patients to adhere to a prescribed exercise programme (Vitousek et al, 1998).

Distraction techniques, particularly at the time of the urge to exercise, can be helpful for reducing excessive exercising behaviour. For some, verbalising thoughts and feelings is appropriate, while for others engaging in a sedentary activity, such as having a bath, can be more helpful. Education and advice play a key role in helping the patient to understand the consequences of over-exercising and in raising awareness about the benefits of change to their health and may help the patient to develop healthier, more appropriate exercise behaviour.

A CBT approach can be used to guide the patient in finding, new healthier ways of thinking regarding their exercise and activity and make changes to their behaviour.

7. BMI Related Guidelines

Though these general guidelines are graded according to the patient's BMI, all risks identified for each individual will need to be taken into consideration.

These guidelines are set up for progression on a weight restoration programme.

Adjustments may need to be made to these guidelines taking the following into account: pre-morbid exercise behaviour (for example, over-exercise behaviour, sport enjoyment, occupation); future plans (for example, return to ballet, university); long term over-exercising behaviour in patients with a chronic eating disorder, whose bodies have adapted to functioning at a low body weight; decisions made by MDT on individual cases.

Below BMI 14

Exercise is not recommended because weight gain at this stage is the overriding priority. However, if an individual does have a particular physical problem, a schedule of activity or treatment plan may be prescribed. This may include gentle bed exercises, and a phased introduction to mobilising.

Typical physical problems may include:

Mobility difficulties

Balance impairment or risk of falls

Difficulty climbing stairs

Re-feeding oedema

Tissue viability / circulatory problems

Postural problems

Over-exercising

Between BMI 14 and 15

An individual is assessed and it may be appropriate to recommend exercises in lying and sitting, for example, gentle Pilates, relaxation techniques and gentle stretches.

BMI 15 to 17

At this stage there is a gradual progression to moderate weight bearing activities. Pilates, Tai Chi and Yoga type exercises can be introduced. Sessions should still be carefully monitored and supervised and preferably done in a group setting.

BMI 17 and above, towards a healthy weight

At this point patients are still on a weight-restoration programme and, therefore, any recommendations for exercise must not be allowed to compromise this. Sessions may become increasingly active and utilise community facilities, for example, badminton, swimming and dancing. Group exercises are preferable to solitary exercising.

At a healthy weight

There is some debate about what constitutes a healthy weight in the general population but the special considerations for people with eating disorders must be borne in mind (Sunday & Halmi, 2003; Weltzin et al., 1991). Patients need to find a healthy balance between activity levels and nutritional intake. The physiotherapist has a special role in formulating and constantly reassessing an activity/exercise regime. Adjustments must take into account the individual's physical health, pre-morbid exercise behaviour, occupation and recreational preferences.

8. Education and Advice

The Physiotherapist has an important role to play in imparting information to benefit patients' understanding of their bodies. In challenging their unhelpful and often faulty thinking, the Physiotherapist can help them to form healthier, alternative thoughts. In order to challenge patients' misperceptions regarding exercise and their body image, it is helpful to give basic information on the body's structure and physiology. Topics for discussion might include: body composition and muscles and bone functions and the shape that they give the body.

The Physiotherapist can advise on behaviours which are healthier and encourage the patients to adopt new alternative ways of managing their exercise and activities. Exercising with others is strongly advised, as it tends to limit uncontrolled activity, is time-limited and has the added benefit of social interaction. The exercise/activity programme should, above all, be enjoyable and include a wide variety of exercise to counteract possible previous negative associations.

An important message for patients returning to normal exercise is to appreciate that an extra drink or a snack before/ during or after exercise is common practice.

Empowering patients to "listen" to and respect their bodies is crucial. Patients must allow themselves to give exercise a miss when they have injuries, feel unwell, are too busy or simply do not feel like it.

Solitary, rigid or secretive exercising such as the use of home videos or repetitive floor exercises should be positively discouraged, as this may be associated with an increased risk of over-exercising behaviour and a danger of relapse.

For those patients with osteoporosis, high impact exercise or high risk taking activity, for example, horse riding, ice-skating or running is not recommended and should be avoided (NICE Guidelines 2004).

Patients with anorexia and bulimia nervosa have complex physiological and psychological problems. There are few physiotherapists working as members of eating disorder teams in the UK. This means that physiotherapists, working in other settings, may be asked to provide treatment and/or advice for a patient group of whose condition they have limited understanding. Issues associated with physical activity are a major feature in these disorders and these guidelines provide information on the effects of over-activity and offer ways of helping clients to modify their exercise behaviour.

9. References

- Acevedo, E. O., & Ekkekakis, P.(Eds.). (2006) *Psycho-biology of physical activity*. Champaign, IL: Human Kinetics
- Biddle, S. J. H., Fox., K., Boutcher, S. H. (Eds.) (2000) *Physical Activity and Psychological Well-being*. London: Routledge.
- Biddle, S. J. H., & Mutrie, N. (2008) *Psychology of Physical Activity: Determinants, well-being and interventions*. London: Routledge
- Calogero, R.M., & Pedrotty, K.N. (2004). The practice and process of healthy exercise: an investigation of the treatment of exercise abuse in women with Eating Disorders. *Journal of Eating Disorders*. **12**, (4), 273-291.
- Carraro, A., Cognolato, S., Fiorellini Bernardis, A.L. (1998) *Evaluation of a programme of adapted physical activity for ED patients*. *Eating and Weight Disorders*. **3**, (3), (110-4).
- Craft, L. L., & Landers, D. M. (1998) The effects of exercise on clinical depression and depression resulting from mental illness: A meta-analysis. *Journal of Sport & Exercise Psychology*. **20**, 339-357.
- Daley, A. J. (2002) Exercise therapy and mental health in clinical populations: is exercise therapy a worthwhile intervention? *Advances in Psychiatric Treatment*. **8**, 262-270.
- Department of Health. (2004) *At least 5 a week: Evidence on the impact of physical activity and its relationship to health. A report from the Chief Medical Officer*. London: Crown.
- Department of Health (2008) *Improving Health: Changing Behaviour NHS Health Trainer Handbook*. *British Psychological Society Health Psychology Team*. London: Crown.
- Donaghy, M.E. (2007) Exercise can seriously improve your mental health: Fact or fiction? *Advances in Physiotherapy* **9**, (2), 76-88.
- Faulkner, G., & Biddle, S. J. H. (2001) Exercise as therapy: it's just not psychology! *Journal of Sports Science*. **19**, 433-444.
- Faulkner, G., & Sparkes, A. (1999) Exercise as therapy for schizophrenia. *Journal of Sport & Exercise Psychology*. **21**, 52-69.
- Faulkner, G., & Taylor, A.H. (2005) *Exercise, health and mental health: Emerging relationships*. London, UK: Routledge.
- Grinspoon, S., Thomas, L., Miller, K., Pitts, S., Herzog, D., & Klibanski, A. (2001) Changes in regional fat distribution and the effects of oestrogen during spontaneous weight gain in women with anorexia nervosa. *American Journal of Clinical Nutrition*. **73**, (5), 865-869.
- Hausenblas, H.A., Cook, B.J., & Chittester, N.I. (2008) Can exercise treat eating disorders? *Exercise and Sport Sciences Reviews*. **36**, (!), 43-47
- Madhusmita Misra, M.D., Anne Klibanski, M.D. (2002). Evaluation and Treatment of Low Bone Density in Anorexia Nervosa. *Nutrition in Clinical Care*. **5** (6), 2002 298-308.
- Martinsen, E. W. (1995) The effects of exercise on mental health in clinical populations. In *European Perspectives on Exercise and Sport* (ed. S. J. H. Biddle), pp. 71-84. Champaign, IL: Human Kinetics.
- Mayer, L. (2001). Body composition and anorexia nervosa: does physiology explain psychology. *American Journal of Clinical Nutrition*. **73** (5), 851-852.
- Mehler, P. S. (2003). Osteoporosis in Anorexia Nervosa: Prevention and Treatment. *International Journal of Eating Disorders*. **33**, 113-126.
- Mond, J.M., Hay, P.J., Rogers, B., & Owen, C. (2006). An update on the definition of

“excessive exercise” in eating disorder research. *International Journal of Eating Disorders*. **39**, (2),147-153

Mutrie, N. (1998) Exercise as a treatment for moderate depression in the UK National Health Service. In *Sport, Health, Psychology and Exercise Symposium Proceedings*, pp. 96-105. London: The Sports Council and Health Education Authority.

National Institute for Clinical Excellence. (2004) *Eating Disorders, core interventions in the treatment and management of anorexia nervosa, bulimia nervosa and related eating disorders*. Available from www.nice.org.uk/CG009NICEguideline

Sunday, S.R., & Halmi, K.A. (2003) Energy intake and body composition in anorexia and bulimia nervosa. *Physiology Behaviour*. **78**, (1), 11-7.

Sundgot-Borgen, J., Rosenvinge, J.H., Bahr, R., & Sundgot Schneider, L. (2002) The effect of exercise, cognitive therapy, and nutritional counselling in treating bulimia nervosa. *Medicine & Science in Sports and Exercise*. **34**, (2), 190-195

Thien, V., Thomas, A., Markin, D., & Birmingham, C.L. (2000) Pilot study of a graded exercise programme for the treatment of anorexia nervosa. *International Journal of Eating Disorders* **28** (1): 101-106

Vitousek, K., Watson, S. & Wilson, G.T., (1998). Enhancing motivation for change in treatment – resistant eating disorders. *Clinical Psychology Review*. **18**, (4), 391-420.

Weltzin, T. E., Fernstrom, M. H., Hansen, D., McConaha, C., & Kaye, W. H. (1991) Abnormal caloric requirements for weight maintenance in patients with anorexia and bulimia nervosa. *American Journal of Psychiatry*. **149**, (11), 1613-1614.

Appendix: Exercise Behaviour Assessment Tool

Exercise Behaviour Assessment Tool		
	Do You Exercise	Please tick if Yes
1	To burn calories?	
2	Because you must?	
3	Then once you start you can't stop?	
4	Alone?	
5	Daily, missing rest days?	
6	For health or fitness?	
7	Then feel fatigued by exercising?	
8	To inhibit other personal/social/educational/or vocational activities?	
9	Because it helps you maintain your weight?	
10	Repetitively and rigidly?	
11	Because you are annoyed, angry, or upset about something?	
12	Because it prevents deterioration in your osteoporosis?	
13	To lose weight?	
14	Because you feel guilty?	
15	To punish yourself?	
16	To increase your self worth?	
17	To feel a sense of power or control?	
18	Because it improves your mood?	
19	Even if you are unwell, too tired, don't feel like it, or have other things to do?	
20	In secret, e.g. bathroom?	
21	Because you enjoy exercising and find it fun?	
22	Because you feel great anxiety if you are unable to exercise?	
23	Because it reduces your stress levels?	
24	Because it improves your body image?	
25	To feel worthy enough of eating?	
26	Because it helps you gain weight?	