

## **BHFNC Summary of:**

**Obesity: The prevention, identification, assessment and management of overweight and obesity in adults and children.**

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**National Institute for Health and Clinical Excellence (NICE)  
National Collaborating Centre for Primary Care**

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## Purpose of BHFNC summary

The NICE public health guidance on obesity provides recommendations for improving diet and increasing physical activity levels in target areas to help halt the continuing rise in obesity levels in the UK. This BHFNC summary highlights the key recommendations to increasing physical activity in each of the target areas. The evidence and evidence statements have been provided along with each of the recommendations which have been made after assessing the evidence. The full guidance can be downloaded by section at: <http://www.nice.org.uk/guidance/CG43/guidance>

## Overview

NICE has produced the first national guidance on the prevention, identification, assessment, and management of overweight and obesity in children and adults in England and Wales. This guidance has been published at a crucial time when recent estimates suggest that more than 12 million adults and 1 million children in England will be obese by 2010 if no action is taken. With the 2004 Public Service Agreement (PSA) target of 'halting the year-on-year rise in obesity among children aged under 11 by 2010 in the context of a broader strategy to tackle obesity in the population as a whole'.

**The NICE guidance has 3 main aims:**

- 1. To stem the rising prevalence of obesity and diseases associated with it;**
- 2. To increase the effectiveness of interventions to prevent overweight and obesity;**
- 3. To improve the care provided to adults and children, particularly within primary care.**

The recommendations are based on the best available research evidence of effectiveness, including cost effectiveness and also the opinion of the Guidance Development Group (GDG). However, it is striking that good evidence of the effectiveness of a number of key interventions, particularly in children, is lacking.

As far as physical activity is concerned, it should be noted that the NICE guidance does not alter the CMO's recommendation of 'at least five times a week'. It does, however, give guidance on how key organisations such as schools and the NHS can help to implement the CMO recommendations.

**The current CMO recommendations for physical activity are:**

### Adults

- **30 minutes** of moderate intensity physical activity on five or more days of the week to **achieve general health benefits**.

- **45-60 minutes** moderate intensity activity each day to **prevent obesity** in the absence of a reduction in energy intake.
- **60-90 minutes** moderate activity per day to **prevent regaining weight** following weigh loss

## Children

*The evidence base for children and young people is far from complete and the amount of activity required to prevent obesity remains unclear.*

### Currently it is recommended that children achieve:

- **At least 60 minutes** of at least moderate intensity physical activity each day (this may be inadequate to prevent obesity as 60-70% of children are achieving this recommendation yet the prevalence of obesity continues to rise).
- **At least twice a week** activities should be included which aim to improve bone health, muscle strength and flexibility.

### Types of activity

**Moderate intensity activity** – is when an individual experiences an increase in breathing rate, heart rate and a feeling of increased warmth. Examples of moderate intensity activities include: Brisk walking, cycling, swimming, brisk house cleaning, painting and decorating, gentle racquet sports such as badminton, table tennis, gardening.

All body movements contribute to energy expenditure so can contribute to the maintenance of a healthy weight or weight loss. The current recommendation of 30 minutes at least 5 days per week can be achieved through several short bouts of moderate intensity activity of 10 minutes or more or by doing one 30 minute session.

### Factors to consider before implementation of guidance

All health professionals should take into account the complexity of the problem of overweight and obesity management. Professionals need to be aware of the many factors that could be affecting a person's ability to stay at a healthy weight or succeed in losing weight. These factors may be personal or cultural and need to be addressed if interventions are to be successful. The following factors should be considered:

1. Assessing an individual's readiness to change affects decisions on when or how to offer any intervention.
2. Barriers to lifestyle change need to be explored. Possible barriers include:
  - Lack of knowledge about buying and cooking food, and how diet and exercise affect health

- Lack of time
  - Personal tastes
  - Low fitness levels
  - Safety concerns e.g. about cycling
3. Advice needs to be tailored for different population groups. This is particularly important for people from black and minority ethnic groups, those on low incomes and those at life stages with increased risk for weight gain.
  4. Treating children for overweight and obesity may stigmatise them and put them at risk for bullying. Interventions to help children overcome weight management issues should, therefore aim to build self esteem and be confidential especially if help is offered at school.

**The public health recommendations are divided according to their key audiences and settings they apply to:**

- The public
- The NHS
- Local authorities
- Early years settings
- Schools
- Workplace
- Self-help, commercial and community programmes

## Grading the evidence

The evidence used for the recommendations was summarised into a series of evidence statements which were graded according to the research designs (Table 1). These grades were considered by the Guidance Development Group (GDG) and amended if necessary.

**Table 1. Levels of evidence for intervention studies**

Level of evidence	Type of evidence
1++	High-quality meta-analyses, systematic reviews of RCTs, or RCTs with a very low risk of bias
1+	Well-conducted meta-analyses, systematic reviews of RCTs or RCTs with a low risk of bias)
1–	Meta-analyses, systematic reviews of RCTs or RCTs with a high risk of bias <sup>a</sup>
2++	High-quality systematic reviews of non-RCT, case–control, cohort, CBA or ITS studies High quality non-RCT, case–control, cohort, CBA or ITS studies with a very low risk of confounding, bias or chance and a high probability that the relation is causal
2+	Well-conducted non-RCT, case–control, cohort, CBA or ITS studies with a very low risk of confounding, bias or chance and a moderate probability that the relation is causal
2–	Non-RCT, case–control, cohort, CBA or ITS studies with a high risk of confounding, bias or chance and a significant risk that the relationship is not causal <sup>a</sup>
3	Non-analytic studies (for example, case reports, case series)
4	Expert opinion, formal consensus

<sup>a</sup> Studies with a level of evidence ‘–’ should not be used as a basis for making a recommendation.

RCT – randomised controlled trial; CBA – controlled before-and-after; ITS – interrupted time series

## Recommendations for managing and preventing obesity for the public

The public should aim to achieve a healthy weight to improve their health and reduce the risk of diseases associated with obesity. Physical activity levels should be encouraged among adults and children, even in cases where weight loss is not desired as an outcome, due to the health benefits associated with regular physical activity.

### **Evidence**

Moore (2003)<sup>7</sup> examined 106 children aged 3-5 years with Caltrac motion sensors to assess physical activity levels. It was found that children in the highest tertile for physical activity had consistently smaller gains in BMI throughout childhood. By 11 years, sum of 5 skinfolds was 95.1mm, 94.5mm and 74.1mm for the low medium and high activity level groups respectively. Elgar (2005)<sup>13</sup> assessed the relationship between physical activity and BMI change among 355 Welsh adolescents. The results showed that there was an association between more hours per week of sports participation and lower increases in BMI over a four year period.

O'Loughlin and coworkers (2000)<sup>6</sup> reported that playing video games every day was significantly associated with increase in BMI in 9-12 year old girls but not in boys. Viner's (2005)<sup>16</sup> research suggested that weekend but not weekday TV viewing in early childhood independently predicted increased adult BMI

Nooyens (2005)<sup>42</sup> investigated the effects of retirement on lifestyle and weight and waist circumference in 288 Dutch men. Over five years, increases in weight were associated with a decrease in several physical activities. Increase in body weight and waist circumference was higher among men who retired from active jobs. Bell (2001)<sup>49</sup> found that heavy work related physical activity in Chinese adults was associated with reduced risk of weight gain, whilst the results of Ball's (2002)<sup>48</sup> cohort found that reduced risk of excess weight gain was associated with lower sedentary activity.

### **Evidence Statements**

- **Cohort studies suggest that children who do not participate in sport outside of school and who are the least active appear to gain more weight than their more active peers** (*Burke et al. 2005<sup>4</sup>, Elgar et al. 2005<sup>13</sup>, Moore et al. 2003<sup>7</sup>, O'Loughlin et al. 2000<sup>6</sup> [2+], GUT study<sup>9-10</sup> [2+], Klesges et al. 1995<sup>2</sup> [2+], Datar et al. 2004<sup>15</sup> [2+]*).
- **The evidence from cohort studies is inconsistent on the associations between television viewing and weight gain. Some but not all identified studies found a significant association between greater television viewing and weight gain** (*Supportive: Viner et al. 2005<sup>16</sup>, Burke et al. 2005<sup>4</sup>, Elgar et al. 2005<sup>13</sup>, Reilly et al.*

2005<sup>3</sup>, Moore et al. 2003<sup>7</sup>, Kaur 2003 et al<sup>17</sup> [2+], GUT study<sup>9-10</sup> [2+]  
Not supportive: Robinson et al. 1993<sup>18</sup> [2+], Bogaert et al. 2003<sup>11</sup> [2+]  
Inconsistent: O'Loughlin et al. 2000<sup>6</sup> [2+]

- **There is a body of evidence from cohort studies that adults are more likely to maintain a healthy weight if they maintain an active lifestyle and reduce sedentary behaviours such as television viewing.** (Two reviews [both 2++] Williamson 1996<sup>40</sup> and Saris et al. 2003.<sup>41</sup> In Saris, 9 of 11 studies showed significant inverse associations between physical activity levels (PAL) and BMI/weight. Individual studies [2+]: Nooyens et al. 2005<sup>42</sup>, Klesges 1992<sup>43</sup> and Owens 1992,<sup>44</sup> Gerace 1996,<sup>32</sup> DiPietro 1998,<sup>45</sup> Martikainen 1999,<sup>46</sup> NHS II,<sup>47</sup> Ball 2002,<sup>48</sup> Bell 2001,<sup>49</sup> Droyvold 2004,<sup>50</sup> Sundquist 1998,<sup>51</sup> Wagner 2001,<sup>52</sup> CARDIA,<sup>53-54</sup> Lissner 1997,<sup>55</sup> Kahn 1990<sup>36</sup>).

### **Recommendations for all**

#### **Recommendation 1**

Everyone should aim to maintain or achieve a healthy weight, to improve their health and reduce the risk of diseases associated with overweight and obesity, such as coronary heart disease, type 2 diabetes, osteoarthritis and some cancers. (Opinion of the GDG)

#### **Recommendation 2**

People should follow these strategies to make it easier to maintain weight:

- **Make enjoyable activities – such as walking, cycling, swimming, aerobics and gardening – part of everyday life**
- **Minimise sedentary activities, such as sitting for long periods watching television, at a computer or playing video games.**
- **Build activity into the working day – for example, take the stairs instead of the lift, take a walk at lunchtime**

### **Recommendations for parents and carers**

#### **Recommendation 3**

Parents and carers should ensure that active play is encouraged to their children and that sedentary activities are gradually reduced. They should also encourage people to participate in sport or other active recreation and make the most of opportunities for exercise at school.

## ***Recommendations for adults considering dieting to lose weight***

### **Recommendation 4**

**Weight loss programmes (including commercial or self-help groups, slimming books or websites) are recommended only if they encourage regular physical activity and expect people to lose no more than 0.5-1kg per week. People with certain medical conditions are advised to see their GP before starting a weight loss programme. This recommendation applies to adults only as children and young people with weight problems are advised to seek help from their practice nurse or GP (opinion of the GDG).**

## **Recommendations for managing and preventing obesity for NHS: Health Professionals**

Obesity – and implementing the following recommendations – should be an ongoing priority and should be clearly identified as such by local strategic partnerships, PCT boards and managers and front line staff.

Implementation of the recommendations will contribute to the PSA target to halt the year on year rise in obesity in children under 11 years or by 2010. Recommendations can be delivered through local strategic plans (LSPs) and community strategy implementation, including the Health, Social Care and Well-being strategies in Wales, as appropriate. They can also be included in Local Area Agreements (LAAs).

### **Evidence**

A systematic review of exercise training in early postmenopausal women in which some of the interventions were combined with diet, found an improved body composition in 9 of the 18 included studies (Asikainen et al., 2004)<sup>226</sup>. One US RCT found that information and support provided on physical activity by trained staff resulted in a significant change in BMI, compared with no change in the control group (Stewart et al., 2001)<sup>235</sup>. However, two RCTs found no evidence of effect. Pereira et al., (1998)<sup>242</sup> reported no weight differences at 10 year follow up of US postmenopausal women who were encouraged to walk more often. With regards to interventions focused on counselling, the Family Heart Study Group reported that the weight of the intervention group who received advice on physical activity and diet was lower by an average of 1kg compared with controls at follow up.

### **Evidence Statements**

- **Sustained health-professional-led interventions in primary care or community settings, focusing on diet and physical activity or general health counselling can support maintenance of a healthy weight**

(Systematic review Asikainen et al. 2004<sup>226</sup> (1++), Simkin-Silverman et al. 2003<sup>227</sup> (1++), ICRF 1995<sup>228</sup> (1+), Murray and Kurth 1990<sup>229</sup> (1++) Fries et al. 1993<sup>230</sup> (1+), Jeffery 1999<sup>231</sup> (1±), Family Heart Study Group 1994<sup>232</sup> (1+) Dzator et al. 2004<sup>233</sup> (1), ICRF 1994<sup>234</sup> [1+]).

- **Interventions which provide support and advice on physical activity and diet are more likely to be effective for weight outcomes than interventions which focus on physical activity alone. There is no reliable evidence for diet alone** (Stewart et al. 2001<sup>235</sup> [1+] Taylor et al. 1998<sup>236</sup> [1+], Schmitz et al. 2003<sup>237</sup> [1+], Coleman et al. 1999<sup>238</sup> [1+], Dunn et al. 1999<sup>239</sup> [1+], Elley et al. 2003<sup>240</sup> [1++] Hillsdon 2002<sup>241</sup> [1+], Pereira et al. 1998<sup>242</sup> [1+], Tully et al. 2005<sup>243</sup> [1+], Lamb et al. 2002<sup>244</sup> [1+], Halbert et al. 2000<sup>245</sup> [1++] Wrieden et al. 2002<sup>246</sup> [2+]; RCT does not support: John et al. 2002<sup>247</sup> [1++]).

### **Overarching recommendations**

#### **Recommendation 1**

**Managers and health professionals in all primary care settings should ensure that preventing and managing obesity is a priority at both strategic and delivery levels. Dedicated resources should be allocated for action (Opinion of the GDG).**

### **Strategic recommendations for senior managers and budget holders**

#### **Recommendation 2**

**In their role as employers, NHS organisations should set an example in developing public health policies to prevent and manage obesity by following existing guidance and (in England) the local obesity strategy. In particular:**

- there should be policies, facilities and information that promote physical activity, for example, through travel plans, by providing showers and secure cycle parking and by using signposting and improved décor to encourage stair use (Opinion of the GDG).

#### **Recommendation 3**

All primary care settings should ensure that systems are in place to implement the local obesity strategy. This should enable health professionals with specific training, including public health practitioners working singly and as

part of multidisciplinary teams, to provide interventions to prevent and manage obesity. All primary care settings should address the training needs of the staff involved in preventing and managing obesity. Allocating adequate time for these training needs to be addressed needs to be a priority.

## Evidence

Hardcastle and Taylor, (2001)<sup>267</sup> demonstrated the importance of encouragement from GPs in promoting physical activity in addition to participant commitment and confidence. However, a small qualitative study produced by Fuller et al., (2003)<sup>268</sup> found that GPs tended to view general practice as a place for treatment of illness and disease rather than provision of dietary advice. Biddle et al., (1994)<sup>269</sup> concluded that the success of physical activity promotion schemes in primary care is dependent upon the qualities of key personnel in contact with the participants. The health professional must be motivational and the support of the health professional should be maintained for example through mailed information. The type of health professional providing the advice appeared not to be important.

## Evidence Statements

- **The type of health professional who provides the advice is not critical as long as they have the appropriate training and experience, are enthusiastic and able to motivate, and are able to provide long-term support** (*Hardcastle and Taylor 2001,<sup>267</sup> Fuller et al. 2003<sup>268</sup>, Biddle et al. 1994<sup>269</sup> [all grade 3]*).
- **There is some evidence that primary care staff may hold negative views on the ability of patients to change behaviours, and their own ability to encourage change** (*Fuller et al. 2003<sup>268</sup>, Coggans et al. 2000<sup>270</sup>, Benson and Cribb 1995<sup>271</sup>, Hopper and Barker 1995<sup>272</sup> [all grade 3]*).
- **Tailoring physical activity advice to address potential barriers (such as lack of time, access to leisure facilities, need for social support and lack of self-belief) is key to the effectiveness of interventions.** (*Gidlow et al. 2005<sup>253</sup>, Keller et al. 1999<sup>278</sup> [3++], Martin and Wolff-May 1999,<sup>279</sup> Ashley et al. 2000<sup>280</sup>, See Tai et al. 1999,<sup>281</sup> Vernon and Brewin 1998,<sup>277</sup> Horsefall/Wealden District Council 1997<sup>282</sup>*)

## Recommendation 4

**Local health agencies should identify appropriate health professionals and ensure that they receive training in:**

- **the health benefits and the potential effectiveness of interventions to prevent obesity, increase activity levels and improve diet (and reduce energy intake)**

- the best practice approaches in delivering such interventions, including tailoring support to meet people's needs over the long term
- the use of motivational and counselling techniques.

## Evidence

One systematic review led to Eakin et al., (2000)<sup>250</sup>, concluding that counselling adults in a primary care setting is moderately effective in the short term. The results of Harland et al., (1999)<sup>252</sup> support this conclusion as they found that an incentive study offering free access to leisure facilities resulted in increased physical activity scores at 12 weeks, but this was not maintained at 12 months. Elley et al., (2003)<sup>240</sup> researched an educational intervention and found those receiving oral and written advice from GPs plus motivational phone calls from an exercise specialist, reported a significant difference between intervention and control including the proportion undertaking 2.5 hours/week exercise. Keller, (1999)<sup>278</sup> found individual perceptions are strongly related to exercise behaviour and that clinicians can help to facilitate these perceptions.

## Evidence Statements

- **Behavioural/educational interventions to increase physical activity can be moderately effective, particularly for walking and non-facility-based activities, although increases may not be sustained over time** (Hillsdon and Thorogood 1996<sup>248</sup> [1++], Eden et al. 2002<sup>249</sup> [1++], Eakin et al. 2000<sup>250</sup> [1++], Morgan 2005<sup>251</sup> [1+], Dzator et al. 2004<sup>233</sup> 1+, Simkin-Silverman et al. 2003<sup>227</sup> [1++], Stewart et al. 2001<sup>235</sup> [1+], Coleman et al. 1999<sup>238</sup> [1+], Dunn et al. 1999<sup>239</sup> [1+], Pereira et al. 1998<sup>242</sup> [1+], Harland et al. 1999<sup>252</sup> [1++], Stevens et al. 1998<sup>169</sup> [1+], Elley et al. 2003<sup>240</sup> [1++], Hillsdon 2002<sup>241</sup> [1+], Jeffery 1999<sup>231</sup> [1±], Lamb et al. 2002<sup>244</sup> [1+], Schmitz et al. 2003<sup>237</sup> [1+]).
- **Tailoring physical activity advice to address potential barriers (such as lack of time, access to leisure facilities, need for social support and lack of self-belief) is key to the effectiveness of interventions** (Gidlow et al. 2005<sup>253</sup> [3++], Keller et al. 1999<sup>278</sup> [3++], Hardcastle and Taylor 2001,<sup>267</sup> Martin and Wolff-May 1999,<sup>279</sup> Ashley et al. 2000<sup>280</sup>, See Tai et al. 1999,<sup>281</sup> Vernon and Brewin 1998,<sup>277</sup> Horsefall/Wealden District Council 1997<sup>282</sup>)

## Recommendation 5

**Interventions to increase physical activity should focus on activities that fit easily into people's everyday life (such as walking), should be tailored to people's individual preferences and circumstances and should aim to improve people's belief in their ability to change (for example, by verbal persuasion, modelling exercise behaviour and discussing positive**

**effects). Ongoing support (including appropriate written materials) should be given in person or by phone, mail or internet.**

## **Evidence**

Nagata et al., (2002)<sup>27</sup> assessed the significance of some of the factors associated with weight change during the menopause. They reported that nutrient intakes were not significantly associated with difference in weight change between premenopausal and postmenopausal women and that there was no significant association between weight and exercise levels. Asikainen et al., (2004)<sup>226</sup> found that in 9 out of 18 RCTs, body composition could be improved during the menopause. The effect was optimal when exercise was combined with a weight reducing diet, particularly for overweight participants. With regards to smoking cessation and weight gain, Kawachi et al., (2005)<sup>39</sup> found that weight gains may be minimised if cessation is accompanied with a moderate increase in physical activity levels.

## **Evidence Statements**

- **There is a body of evidence that suggests exercise (walking, other aerobic training, resistance training, strength training with weights machines or combinations) can improve body composition and result in a small loss of body weight and fat in postmenopausal women. This effect seemed to be optimal when combined with a weight-reducing diet (Asikainen et al. 2004)<sup>226</sup>.**
- **There is limited evidence from cohort studies that increasing physical activity may minimise the weight gain associated with smoking cessation (Kawachi et al. 2005)<sup>39</sup>.**

## **Recommendation 6**

**Health professionals should discuss weight, diet and activity with people at times when weight gain is more likely, such as during and after pregnancy, the menopause and while stopping smoking.**

## **Evidence**

Tailored advice is recommended to health professional as one good quality systematic review (Ogilvie et al., 2004)<sup>300</sup> concluded that targeted behavioural change programmes with tailored advice can improve the travel behaviour of motivated subgroups. The largest study showed a 5% shift to active travel.

The effectiveness of supportive information was reported on in two systematic reviews. The authors concluded that educational materials such as posters and stair riser banners have a weak positive effect on stimulating stair

climbing. Kahn et al., (2002)<sup>297</sup>, reported a range of different effect sizes from a 5.5% to 128.6% net increase and noted that the effectiveness of interventions may be increased by customising signs to appeal to specific population groups.

Health professionals are recommended to promote community schemes that promote access to physical activity. This recommendation was formed as one good quality systematic review found strong evidence that the creation of space or enhanced access to places for physical activity combined with informational outreach activities is effective in increasing physical activity levels (Kahn et al., 2002)<sup>297</sup>.

### Evidence Statements

- **There is a body of evidence that creation of, or enhanced access to space for physical activity (such as walking or cycling routes), combined with supportive information/promotion, is effective in increasing physical activity levels** (Kahn et al. 2002<sup>297</sup> [2++], Merom et al. 2003<sup>105</sup> [2+], Brownson 2004<sup>298</sup> [2+], Evenson et al. 2005<sup>299</sup> [2+])
- **Targeted behavioural change programmes with tailored advice appear to change travel behaviour of motivated groups. Associated actions such as subsidies for commuters may also be effective** (Ogilvie et al. 2004<sup>300</sup> [1++])
- **There is little evidence of benefit from locally implementable multi-component city- and state-wide interventions to prevent cardiovascular disease on weight outcomes** (Shelley et al. 1995<sup>288</sup>, O'Loughlin et al. 1999,<sup>106</sup> Baxter et al. 1997<sup>289</sup>).
- **Point of decision prompts or educational materials such as posters and banners have a weak positive effect on stair walking** (Foster and Hillsdon 2004<sup>301</sup> [2+], Kahn et al. 2002<sup>297</sup> [2++], Marshall et al. 2002<sup>302</sup>), Adams and White 2002<sup>303</sup> [2+]).

### Recommendation 7

**Health professionals should support and promote community schemes and facilities that improve access to physical activity, such as walking or cycling routes, combined with tailored information, based on an audit of local needs. They should also support and promote behavioural change programmes along with tailored advice to help people who are motivated to change become more active.**

## Recommendations for managing and preventing obesity for local authorities and partners in the community

The environment in which people live may influence their ability to participate in physical activity to help maintain a healthy weight. Evidence has shown that there are fundamental barriers which need to be addressed in order to change individuals behaviours such as concerns over safety, transport links and services. Local authorities should recognise, as employers, their role in promoting physical activity and a healthy lifestyle.

### **Evidence**

Data from 2 sets of case studies suggest that the effectiveness of interventions promoting active travel may be improved by; traffic calming, better lighting, traffic free routes, provision of cycle stores and provision of guides and maps (Sustrans, 2004<sup>313</sup>; Department for Transport, 2003<sup>314</sup>). Two years after the implementation of London's congestion charging scheme, it was estimated that 10-20% of car journeys had transferred to cycling, walking, motorcycle, taxi or car share. Parker and Seddon (2003) found that when both school travel plan and safer routes to school programmes were in place, there was a 3% increase in walking. With regards to addressing safety concerns, a cross sectional survey by Foster et al., (2004)<sup>310</sup>, found that the perceived safety of walking during the day and lack of shops within walking distance were significant barriers to walking for women but not men. Cole-Hamilton, (2002)<sup>320</sup> also discussed concerns about safety as a barrier to physical activity. Their systematic review of 93 consultation studies in England found that barriers to play for school-age children include: fears for safety (including bullies); dirty unkempt play areas and parks; and a lack of facilities for disabled children<sup>320</sup>.

### **Evidence Statements**

- **Auditing the needs of all local users can help engage all potential local partners and establish local ownership** (*[All grade 3], Sustrans 2004,<sup>313</sup> Department for Transport 2003,<sup>314</sup> Derek Halden Consultancy 1999<sup>315</sup>*).
- **Interventions may be ineffective unless fundamental issues are addressed, such as individual confidence to change behaviour, cost and availability; pre-existing concerns such as poorer taste of healthier foods and confusion over mixed messages; the perceived 'irrelevance' of healthier eating to young people; and the potential risks (including perception of risk) associated with walking and cycling** (*[majority grade 3], Cole-Hamilton et al. 2002<sup>320</sup>, Derek Halden Consultancy 1999,<sup>315</sup> Dixey 1999<sup>321</sup> and 1998<sup>322</sup>, DiGuisseppi 1998<sup>175</sup>, Coakley et al. 1998<sup>81</sup>, Jones 2001<sup>323</sup>, Hillman 1993<sup>324</sup>*).

- **Addressing safety concerns in relation to walking and cycling may be particularly important for females and children and young people and their parents** (*Foster et al. 2004<sup>310</sup>, Coakley et al. 1998<sup>81</sup>, Mulvihill et al. 2002<sup>308</sup>, Davis and Jones 1996<sup>309</sup>*).
- **Changes to city-wide transport, which make it easier and safer to walk, cycle and use public transport – such as the congestion charging scheme in the City of London and Safer Route to School schemes, have the potential to make active transport more appealing to local users** (*Transport for London 2005<sup>326</sup> [case study/audit 3]; DETR 2000<sup>327</sup> [case studies 3], Parker and Seddon 2003<sup>328</sup> [BAs; 2], Jones 2001<sup>323</sup> [BA/survey; 2+]*)

### Recommendation 1

**Local authorities should set an example in developing policies to prevent obesity in their role as employers, by following existing guidance and the local obesity strategy. Physical activity should be promoted, for example, through travel plans, by providing showers and secure parking and improving décor to encourage stair use.** (Opinion of the GDG).

### Recommendation 2

**Local authorities should engage with the local community to identify environmental barriers to physical activity and healthy eating. Barriers identified should be addressed.**

#### Evidence

See evidence from ‘Recommendations for Health professionals: recommendation 7’ (see page 14-15).

#### Evidence Statements

See all evidence statements from ‘Recommendations for health professionals: recommendation 7 (see page 14).

### Recommendation 3

**Local authorities should work with local partners, such as industry and voluntary organisations, to create and manage more safe spaces for incidental and planned physical activity, addressing as a priority any concerns about safety, crime and inclusion, by:**

- providing facilities such as cycling and walking routes, cycle parking, area maps and safe play areas
- making streets cleaner and safer, through measures such as traffic calming, congestion charging, pedestrian crossings, cycle routes, lighting and walking schemes
- ensuring buildings and spaces are designed to encourage people to be more physically active (for example, through positioning and signing of stairs, entrances and walkways)
- considering in particular people who require tailored information and support, especially inactive, vulnerable groups.

## Evidence

As previously indicated concerns about safety were identified in a systematic review by Cole-Hamilton, (2002)<sup>320</sup> (see page 16). Cross-sectional and focus group surveys (e.g. Dixey 1999)<sup>321</sup>, provide powerful evidence that children would like to walk, cycle or take the bus to school but perceived and actual dangers have led to an increase in vigilance by parents and reduced activity among children.

## Evidence Statement

- Interventions may be ineffective unless fundamental issues are addressed, such as individual confidence to change behaviour, cost and availability; pre-existing concerns such as poorer taste of healthier foods and confusion over mixed messages; the perceived 'irrelevance' of healthier eating to young people; and the potential risks (including perception of risk) associated with walking and cycling (Cole-Hamilton et al. 2002<sup>320</sup>, Derek Halden Consultancy 1999,<sup>315</sup> Dixey 1999<sup>321</sup> and 1998<sup>322</sup>, DiGiuseppi 1998<sup>175</sup>, Coakley et al. 1998<sup>81</sup>, Jones 2001<sup>323</sup>, Hillman 1993<sup>324</sup>)

## Recommendation 4

All Community programmes to prevent obesity, increase activity levels and improve diet should address the concerns of local people. Concerns might include the availability of services and the cost of changing behaviour, the expectation that healthier foods do not taste as good, dangers associated with walking and cycling and confusion over mixed messages in the media about weight, diet and activity

## Recommendations for managing and preventing obesity for early years settings and schools

### Early Years

The pre-school years (age 2-5 years) shape children's behaviours and attitudes. Parents have the main responsibility for their children's development however, other child carers also have a key role to play in developing opportunities for children to be active by acting as role models. It is thought that staff in childcare settings will take forward the following recommendations. Training opportunities should be considered if needed, as should establishing partnerships with local PCTs/health professionals.

### Evidence

Four studies were identified which assessed 2-5 year olds. These studies were conducted in a nursery setting and had some degree of family involvement<sup>122-126</sup>. McGarvey *et al.* (2004)<sup>123</sup> reported that parents attending educational sessions significantly improved the frequency of them engaging in active play with their children. Following intervention eight out of nine studies reported that a range of self-reported diet and physical activity outcomes were improved, however only three reported improvements in weight outcomes.<sup>110,112,113</sup> The reason for this disparity is unclear.

### Evidence statements:

- **Interventions require some involvement of parents or carers** (Body of evidence [1+]: virtually all included RCTs involved parents).
- **Interventions which do not identify favourable changes in weight outcomes may identify favourable changes in diet and/or activity outcomes (where recorded). The reasons for this are unclear.** (Body of evidence, majority 1+: seven of the nine studies (Dennison *et al.* 2004<sup>117</sup> [1+], He 2004<sup>112</sup> [1+], Healthy Start<sup>115-116</sup> [2++], Koblinsky *et al.* 1992<sup>122</sup> [2+], McGarvey *et al.* 2004<sup>123</sup> [2+], Reilly and McDowell 2003<sup>124</sup> [grade to be checked on publication of full study], STRIP<sup>113-125</sup> [1+]) reporting significant effects, concurrent with conclusions of systematic review (Worsley 2004<sup>118</sup> [1+]). One study showed mixed results (Hip-Hop<sup>110-111</sup> [1+]).
- **There is limited evidence that structured physical activity programmes within nurseries can increase physical activity levels.** (One RCT: 1+ (Reilly and McDowell 2003<sup>124</sup>) (grade to be checked on publication of full study).
- **Interventions which involve parents in a significant way may be particularly effective and can improve parental engagement in active play with children and a child's dietary intake.** (Body of

evidence [2+](majority of studies included parents but McGarvey et al. 2004<sup>123</sup> [2+] Koblinsky et al. 1992<sup>122</sup> [2+], specifically aimed at parents).

### ***Recommendations for all settings***

#### **Recommendation 1**

**All nurseries and childcare facilities should ensure that preventing excess weight gain and improving children's diet and activity levels are priorities** (Opinion of GDG).

#### **Recommendation 2**

**All action aimed at preventing excess weight gain, improving diet (and reducing energy intake) and increasing physical activity in children should involve parents and carers.**

#### **Recommendation 3**

**Nurseries and other childcare facilities should minimise sedentary activities during playtime, and provide regular opportunities for enjoyable active play and structured physical activity sessions.**

### **Schools**

Regular physical activity is strongly associated with higher academic achievement and improved health in childhood and later life. Physical activity is also linked with greater motivation at school, less depression and anxiety which all have a positive impact on school work. Parents and other care providers are responsible for children to be active. All school policies have the potential to have some impact on the child's ability to maintain a healthy weight and be physically active, for example, school selection processes can determine whether a child can walk or cycle to school. There is no evidence to suggest that school-based interventions to prevent obesity, improve diet and increase activity levels foster eating disorders or extreme exercise behaviour.

It is believed that staff working in schools will have the have the appropriate abilities to implement the following recommendations. Training should be considered where required, as should the potential to establish links with local PCTs/health professionals.

### **Evidence**

Five RCTs and five clinical control trials (CCTs) were identified which aimed to increase physical activity levels.<sup>138-141;144,147-149</sup> There are limited studies which have been conducted in the UK the majority have been carried out in the USA. The evidence suggests that interventions which increase physical activity levels may help children maintain a healthy weight however, the evidence remains inconsistent. Interventions appear to be more successful in primary school children compared to secondary school children. Four of the physical activity interventions showed significant reductions in the children's BMI<sup>138,139,149,169</sup> Stevens *et al.* (1998)<sup>169</sup> reported a significant decrease in skinfold thickness among children participating in a 15 week physical activity intervention.

Ten school-based interventions which included both diet and physical activity components to prevent obesity were examined.<sup>128,130,131,133,134,135,136,137,129;164</sup> Four of these studies found a significant improvement in mean BMI in the intervention groups. Graf *et al.* (2005)<sup>130</sup> reported that in the STEP 2 programme involving primary school children BMI and waist circumference tended to be lower among those in the intervention group compared to the control group. Two out of the six studies which did not find a significant difference in mean BMI between the control and intervention groups were conducted in the UK. An intervention by Sahota *et al.* (2001)<sup>133</sup> involved a whole school community and aimed to improve schools meals, tuck shop, curriculum and PE and playground activities reported no difference in BMI between the intervention and control groups at 1 year.

Overall 18 RCTs/CCTs reported activity outcomes. The children participating in the studies were 4.5 to 15.8 years, with the majority of the studies being undertaken by children 12 years and younger. The majority of the intervention studies were shown to be effective. Long and short-term and multi-component interventions are effective although the benefits may not be maintained once the intervention has ended.

#### Evidence statements:

- **The evidence on the effectiveness of multi-component school-based interventions to prevent obesity (addressing the promotion of physical activity, modification of dietary intake and reduction of sedentary behaviours) is equivocal. Some identified interventions demonstrated a reduction in mean BMI and the prevalence of obesity while the intervention was in place, but this finding was not universal.** UK-based evidence in particular is lacking. Four studies, two 1+ RCTs (Sallis *et al.* 2003<sup>128</sup>, Gortmaker *et al.* 1999<sup>129</sup>) and two 2+ CCTs (Graf *et al.* 2005,<sup>130</sup> Kain *et al.* 2004<sup>131</sup>). Six did not show significant improvements in weight/BMI (Warren *et al.* 2003<sup>132</sup> [1+], Sahota *et al.* 2001<sup>133</sup> [1+], Caballero *et al.* 2003<sup>134</sup> [1+], Donnelly *et al.* 1996<sup>135</sup> [2+], Neumark-Sztainer *et al.* 2003<sup>136</sup> [2+], Story *et al.* 2003<sup>137</sup> [1+])
- **There is a body of evidence that school-based multi-component interventions addressing various aspects of diet and/or activity in**

the school, including the school environment are effective in improving physical activity and dietary behaviour, at least while the intervention is in place. However, UK-based evidence to support multi-component interventions (the ‘whole-school approach’) is limited. Eight studies 1+: Simon et al. 2004,<sup>151</sup> Pate et al. 2005,<sup>141</sup> Caballero et al. 2003,<sup>134</sup> Leupker et al. 1996,<sup>152</sup> Trevino et al. 2004/5,<sup>153,154</sup> Sahota et al. 2001,<sup>133</sup> Warren et al. 2003,<sup>132</sup> Vandongen et al. 1995<sup>155</sup>, Four studies 2+: Donnelly et al. 1996,<sup>135</sup> Manios 1998/99/2002,<sup>156–157</sup> Anderson 2000 from Woolfe and Stockley 2005 review<sup>158</sup> [2+]

- **There is evidence from multi-component interventions to suggest that both short- and long-term physical activity focused interventions may be effective, at least while the intervention is in place.** Six multi-component studies supportive. Five studies 1+: Simon et al. 2004,<sup>151</sup> Pate et al. 2005,<sup>141</sup> Caballero et al. 2003,<sup>134</sup> Leupker et al. 1996,<sup>152</sup> Trevino et al. 2004/5<sup>153,154</sup>. One study 2+: Manios et al. 1998/9/2002<sup>156–157</sup>

### ***Overarching recommendation***

#### **Recommendation 1**

**All schools should ensure that improving the diet and activity levels of children and young people is a priority to prevent against weight gain. A whole school approach should be used to develop life-long physical activity practices. (*Opinion of the GDG*)**

### ***Strategic recommendations for head teachers and chairs of governors***

#### **Recommendation 2**

**Head teachers and chairs of governors, in collaboration with parents and pupils, should assess the whole school environment and ensure that the ethos of all school policies helps children maintain healthy weight, eat a healthy diet and be physically active. This includes policies relating to recreational space, school travel plans and provision for cycling, of the taught curriculum (including PE).**

#### **Recommendation 3**

**Interventions should be sustained, multi-component and address the whole school, including after school clubs and other activities. Short-term interventions and one-off events are insufficient and should be part of a long-term integrated programme.**

## Evidence

Corroborative evidence from four large-scale reviews which evaluated barriers and facilitators to physical activity and healthy eating among children were identified <sup>166-168</sup> The main barrier perceived by staff developing school-based interventions was lack of time, resources and training. Young peoples views on barriers and facilitators suggest that interventions should:

- Modify PE to suit their preferences
- Involve family and make physical activity a social activity
- Increase young people's confidence, knowledge and motivation relating to physical activity
- Make physical activities more accessible, affordable and appealing to young people. <sup>166-168</sup>

Interventions should address the barriers and facilitators to participation in physical activity identified by children:

- Providing activities that are enjoyable, in social atmosphere, giving children some choice
- Involve parents in interventions
- Improve children's access to physical activity opportunities

### Evidence statement:

- **There is a body of evidence to suggest that young people's views on barriers and facilitators suggest that interventions should:**
  - (i) modify physical education lessons to suit their preferences,**
  - (ii) involve family and peers, and make physical activity a social activity,**
  - (iii) increase young people's confidence, knowledge and motivation relating to physical activity, and**
  - (iv) make physical activities more accessible, affordable and appealing to young people. (EPPI-<sup>165,166</sup>)**

### Recommendation 4

**Schools should establish links with relevant organisations and professionals, including health professionals and those involved in local strategies and partnership to promote sports for children and young people. (Opinion of the GDG)**

***Recommendation for teachers, health and other professionals and parents***

**Recommendation 5**

**Staff delivering physical education, sport and physical activity should promote activities that children and young people find enjoyable and can take part in outside school, though into adulthood. Children's confidence and understanding of why they need to continue physical activity throughout life (physical literacy) should be developed as early as possible. (Opinion of GDG)**

**Recommendation 6**

**Staff planning interventions should consider the views of children and young people, any differences in preferences between boy and girls, and potential barriers (cost or expectation that healthier foods do not taste as good).**

**Recommendation 7**

**Where possible, parents should be involved in school-based interventions through, for example, special events, newsletters and information about lunch menus and after school activities. (Opinion of GDG)**

**Recommendations for managing and preventing obesity in the workplace**

The workplace has the potential to promote public health issues such as obesity. It can provide opportunities for individuals to maintain a healthy weight by offering healthy food choices and providing physical activity opportunities such as using stairs instead of lifts, staff gym, cycle parking. Although addressing obesity is not the main focus of workplaces taking action may benefit both employers and employees.

**Evidence**

The evidence for physical activity interventions in the workplace remains inconclusive. Four RCTs<sup>194-197</sup> and one CBA<sup>198</sup> were identified of which only one RCT<sup>194</sup> found a significant decrease in body weight among those in the intervention group. A review of the literature concluded that work-based educational sessions on levels of physical activity are significantly effective.<sup>199</sup> Out of nine interventions that used educational sessions four found significant improvements. Another review<sup>209</sup> focusing on the implementation and

effectiveness of worksite physical activity programmes concluded there was strong evidence to suggest these programmes had a positive impact on increasing activity levels. Work place promotional strategies to increase active travel to and from work have also been shown to have a positive effect.<sup>223-224</sup> A systemic review concluded that there is a lack of UK based research and that interventions to encourage walking and non-facility-based activity lead to sustainable increases in physical activity.<sup>248</sup> Two reviews found that the use of educational posters and stair riser banners have a weak positive effect on stair climbing.<sup>297,301</sup> Foster *et al.* (2004)<sup>301</sup> reported that most of the interventions were effective only in the short term however there was a 29% increase in stair climbing at 6 months.

#### Evidence statements:

- **There is inconclusive evidence for the effectiveness of workplace-based physical activity interventions on weight outcomes.** Body of evidence variable: four RCTs (all 1+) and one CBA (2++), One RCT supports: Pritchard *et al.* 1997<sup>194</sup> (1+) One RCT shows trend: Grandjean *et al.* 1996<sup>195</sup> (1+) Two RCTs (both 1+) (Grønningsater *et al.* 1992,<sup>196</sup> Lee and White 1997<sup>197</sup>) and one CBA (2++) (Cook *et al.* 2001<sup>198</sup>) do not support but amount of activity prescribed in interventions considered insufficient.
- **Worksite behaviour modification programmes, such as health screening followed by counselling and, sometimes, environmental changes, can lead to improvements in nutrition and physical activity while the intervention is in place.** Body of evidence variable but largely supportive: one systematic review and six RCTs (majority 1+) One systematic review (1+) (Janer *et al.* 2002<sup>199</sup>) supports for diet and physical activity Four RCTs for diet – three support: Sorensen *et al.* 1996<sup>200</sup> (1+), Sorensen *et al.* 1999<sup>201</sup> (1+), Sorensen *et al.* 1998<sup>202</sup> (1±); one does not support: Sorensen *et al.* 2002<sup>203</sup> (1+) Two RCTs for physical activity ( one supports: Emmons *et al.* 1999<sup>204</sup> (1+); and one does not support: Nichols *et al.* 2000<sup>205</sup> (1±).
- **Workplace physical activity programmes can have a positive effect on physical activity.** Body of evidence from single [1++] systematic review (Proper *et al.* 2003<sup>209</sup>)
- **Environmental improvements in stairwells, such as decoration, motivational signs and music may increase stair use. Posters alone may be ineffective or effective only while the posters are in place.** Body of evidence variable. Two ITS and one BA One ITS supports: (Kerr *et al.* 2004<sup>210</sup> (2++)); one BA of posters plus email supports in the short term only: Vanden Auweele 2005 *et al.*<sup>211</sup> (2+) One ITS of posters alone does not support: Kerr 2001<sup>212</sup> (2++)

- **A UK-based survey of Heartbeat Award schemes, recommended improved promotion and better integration with other health programmes.** (One cross-sectional survey: The Research Partnership 2000<sup>220</sup>).
- **Behavioural/educational interventions to increase physical activity can be moderately effective, particularly for walking and non-facility-based activities, although increases may not be sustained over time.** Body of evidence variable but largely supportive, Four systematic reviews and 12 RCTs (1++/1+) Systematic reviews had variable results with some support: Hillsdon and Thorogood 1996<sup>248</sup> (1++), Eden et al. 2002<sup>249</sup> (1++), Eakin et al. 2000<sup>250</sup> (1++), Morgan 2005<sup>251</sup> (1+) Nine of 13 more recent and/or UK-based RCTs support: Dzator et al. 2004<sup>233</sup> 1+, Simkin-Silverman et al. 2003<sup>227</sup> (1++), Stewart et al. 2001<sup>235</sup> (1+), Coleman et al. 1999<sup>238</sup> (1+), Dunn et al. 1999<sup>239</sup> (1+), Pereira et al. 1998<sup>242</sup> (1+), Harland et al. 1999<sup>252</sup> (1++), Stevens et al. 1998<sup>169</sup> (1+), Elley et al. 2003<sup>240</sup> (1++) One RCT suggests positive trend: Hillsdon 2002<sup>241</sup> (1+) Three RCTs do not support: Jeffery 1999<sup>231</sup> (1±), Lamb et al. 2002<sup>244</sup> (1+), Schmitz et al. 2003<sup>237</sup> (1+) One systematic review (3) noted high attrition in exercise referral studies: Gidlow et al. 2005<sup>253</sup> –(Please note that this review is treated as a review of observational studies, hence grading).

There is a body of evidence that creation of, or enhanced access to space for physical activity (such as walking or cycling routes), combined with supportive information/promotion, is effective in increasing physical activity levels. Body of evidence generally supports. One systematic review and three additional studies 2 (2++) & (2+). One systematic review (Kahn et al. 2002<sup>297</sup> [2++]) and one BA (Merom et al. 2003<sup>105</sup> [2+]) support. One CBA (Brownson 2004<sup>298</sup> [2+]) shows trend. One BA (Evenson et al. 2005<sup>299</sup> [2+]) does not support

### ***Overarching recommendation***

#### **Recommendation 1**

**All workplace especially large organisations such as the NHS and local authorities should address the prevention and management of obesity, because of considerable impact on the health of the workforce and associated cost to industry. Workplaces are encouraged to collaborate**

with local strategic partnerships and to ensure that action is in line with the local obesity strategy (in England). (*Opinion of the GDG*)

### *Recommendations for all workplaces*

#### **Recommendation 2**

**Workplaces should provide opportunities for staff to be more physically active, through**

- **Working practices and policies, such as active travel policies for staff and visitors**
- **A supportive physical environment, such as improving stairwells and providing showers and secure cycle parking**
- **Recreational opportunities, such as supporting out-of hours social activities, lunchtime walks and use of leisure facilities.**

#### **Evidence**

Three RCTs conducted in the USA found that incentive schemes were only effective during the intervention or ineffective for weight control.<sup>191-193</sup> Another incentive study<sup>252</sup> offered free access to leisure facilities and after the 12 week intervention physical activity levels had increased, however this was not maintained at 12 months.

#### **Evidence statements for recommendation 3:**

- **Payroll incentive schemes (such as free gym membership) are either only effective in the short term (during the period of the intervention) or ineffective for weight control.** Body of evidence variable: three RCTs (all 1+) Forster et al. (1985)<sup>191</sup> Jeffery et al. (1985)<sup>192</sup> effective in short term. Jeffery et al. (1993)<sup>193</sup> ineffective.
- **Limited evidence suggests that using an incentive of free access to leisure facilities is likely to increase activity levels but only during the period of the intervention.** One RCT: Harland et al. 1999<sup>252</sup> (1++).

#### **Recommendation 3**

**Incentive schemes (such as policies on travel expenses, the price of food and drinks sold in workplaces and contributions to gym membership) that are used in a workplace should be sustained and part of a wider programme to support staff in managing weight, improving diet and increasing activity levels.**

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