Participation in physical activity by adolescent girls: a social-psychological and physical environmental approach

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Participation in Physical Activity by Adolescent Girls:
A Social-Psychological and Physical Environmental Approach

by

Sarah Helen Whitehead

A Doctoral Thesis
Submitted in partial fulfillment of the requirements for the award of
Doctor of Philosophy of Loughborough University

April 2005
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Abstract

Physical activity in youth is an important public health issue and regular participation in physical activity can contribute to the enhancement of young people’s physical, psychological, and social well-being. However, adolescent girls typically have lower levels of physical activity than boys and their rates of participation decline rapidly during this age period. This thesis presents four studies examining factors influencing adolescent girls’ likelihood of being physically active, and reasons for this decline in physical activity across the teenage years. Study 1 is a systematic review of the literature of correlates of participation in physical activity for adolescent girls. Study 2 uses a qualitative approach to explore potential influences of adolescent girls’ physical activity, and how physical activity might be made more attractive to these girls. Study 3 uses a quantitative approach to examine the role of selected social-psychological and physical environmental factors in three different types of sport and physical activity. Study 4 presents six case studies examining in greater depth some of the ways in which social-psychological factors can impact on physical activity decisions. Overall findings suggest that aspects of the physical environment can be influential to particular activity types; this is an under-researched area and attempts should be made to further examine girls’ perceptions of their environment so that safe and attractive provisions can be made. These attempts should be specific to particular activity types to enable the best possible understanding of potential environmental. Participation in organised sport also appears to account for differences in overall physical activity levels, and it is proposed that more gender-specific organised sport should be made available. Findings in relation to significant others indicate that parental support and encouragement may be more influential than parental role modelling, while the role of friends changes across the teenage years. Here, education programmes for whole families and interventions designed to change behaviour across groups of friends are recommended. Finally, self-presentational concerns appear to be related to actual body size and can serve to either increase or decrease physical activity participation. It is proposed that activities should be offered that emphasise fun and enjoyment, de-emphasise the importance of physical appearance, and stress that physical activity is equally acceptable across individuals of all shapes and sizes.
Publications arising and conference presentations

Publications


Published Abstracts


Conference Presentations

“Differences in social-psychological and physical environmental factors according to moderate and vigorous physical activity levels of Scottish adolescent girls.” Poster presented at the Annual Conference of the International Society for Behavioural Nutrition and Physical Activity, Amsterdam, June 2005.

“Social psychological differences between high, moderate and low active groups of Scottish adolescent girls.” Presented at the Annual Conference of the British Association of Sport and Exercise Sciences, Liverpool, September 2004.
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I also owe a heartfelt thanks to my parents; this is just the latest in a long line of things I wouldn’t have been able to do without their continued emotional and financial support.

I am grateful to Trish Gorely for babysitting when Stuart was away, and to Mary Nevill for the SportScotland job.

Ian Murdey and Claire Mundy both deserve a mention for putting up with me whilst we worked on the STIL project together. Both provided light entertainment in the office and Ian happily chatted about statistics with me for hours – I don’t know many other people who would do that.

Rebecca Duncombe pointed me in the right direction with my qualitative work on several occasions. She also put up with my near constant moaning and so I am very grateful for that.

Finally I would like to thank everybody in the lab for their company over the last few years. I’d like to say you all helped keep me sane but I doubt anybody could do that!
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Chapter 1

Introduction

Physical activity in youth is an important public health issue and regular participation in physical activity can contribute to the enhancement of young people’s physical, psychological, and social well-being (Biddle & Mutrie, 2001). According to the Health Education Authority (HEA) (1998), there are three main rationales for encouraging young people to take part in regular physical activity:

- To optimise physical fitness, current health and well-being, and growth and development;
- To develop active lifestyles that can be maintained throughout adult life;
- To reduce the risk of chronic diseases of adulthood.

The Allied Dunbar National Fitness Survey (ADNFS) (1992) also found that people who exercise regularly in youth are more likely to continue/resume exercise in their later years, and this point is extended by Riddoch (1998), who argues that adult health status has its origins in behaviours established in childhood.

Based on current scientific evidence and expert opinion, the HEA (1998) has drawn up a set of guidelines for young people and physical activity that are intended to be attainable and realistic given current physical activity patterns and lifestyles. Although it is acknowledged that neither the minimal nor the optimal amount of physical activity for young people can be precisely defined, the following recommendations are designed to act as useful guidelines until further research leads to refinements:
Primary recommendations:

- All young people should participate in physical activity of at least moderate intensity for one hour per day;
- Young people who currently do little activity should participate in physical activity of at least moderate intensity for at least half an hour per day.

Secondary recommendation:

- At least twice a week, some of these activities should help to enhance and maintain muscular strength and flexibility and bone health.

There is, however, public concern about the apparent decline in activity in youth: evidence shows obesity in young people to be on the increase (Chinn & Rona, 1994; Fehily, 1999), many youngsters have been shown to possess at least one modifiable coronary heart disease risk factor (Baranowski, Bouchard, Bar-Or, et al., 1992), and many have symptoms of psychological distress (Klint & Weiss, 1987). Added to this is the view that youth are becoming more sedentary as new technologies become more widely available, with national campaigns highlighting youth inactivity as a public health problem (British Heart Foundation, 2000). All of these factors point to a need for further study of youth physical activity.

Research has shown that prior to the ages of 11 and 12 the vast majority of children look forward to their PE classes or taking part in recreational physical activities. Data are highly consistent, however, in showing that young people's participation in physical activity declines across their teenage years. Although some studies have found this decline to be greater in males than females (Caspersen, Pereira, & Curran, 2000; Telama & Yang, 2000; Van Mechelen, Twisk, Post, Snel, & Kemper, 2000), whilst others report it to be particularly obvious in girls (Armstrong & Welsman, 1997; Pratt, Macera, & Blanton, 1999), it seems to be the case that girls' activity levels are lower than boys' prior to the onset of adolescence and hence, even if the decline is steeper in boys, girls still engage in less physical activity than boys by the end of their adolescent years.
Objective studies have consistently found low levels of physical activity in adolescent girls. Pate, Long and Heath (1994) found that only about a half of boys and a quarter of girls participated in vigorous exercise three or more times a week. Furthermore, Armstrong, Balding, Gentle and Kirby (1990) found a significant negative correlation in girls aged 11-16 between age and time spent with heart rate over 139bpm. Over three weekdays 51.5% of girls did not exhibit a single 10 minute sustained period with heart rate over this threshold; the corresponding figure for Saturday was 93.3%.

Physical activity in adolescent girls is evidently an important concern, and it is now widely acknowledged that we need to understand more about current lifestyles of children and adolescents, including factors potentially associated with physical activity participation and how to increase low levels of participation (Sallis, Simons-Morton, Stone, & al., 1992). The purpose of this thesis, therefore, was to examine factors influencing adolescent girls' likelihood of being physically active, and why their participation declines so steeply during the teenage years. The thesis was guided by the behavioural epidemiology framework outlined by Sallis and Owen (1999). Using a behavioural epidemiology framework is helpful in guiding research across descriptive, analytical and intervention studies, thus helping improve our understanding of health-related behaviours, such as why some people are physically active and others are not. Applied to physical activity the framework has five main phases:

1. Establish the link between physical activity and health;
2. Develop methods for accurately assessing physical activity;
3. Identify factors associated with different levels of physical activity;
4. Evaluate interventions designed to promote physical activity;
5. Translate research findings into practice.

Four studies were carried out, focusing on Phase 3 of the behavioural epidemiology framework. Study 1 is a systematic review of the literature of correlates of participation in physical activity for adolescent girls. Study 2 is an exploratory qualitative study aimed at identifying factors influencing adolescent girls' physical activity decisions and what can be done to encourage adolescent girls to become more physically active. Study 3 uses a quantitative approach to examine the role of
selected social-psychological and physical environmental factors in three different types of sport and physical activity. Finally, study 4 is an in-depth examination of six adolescent girls, attempting a greater understanding of some of the ways in which social-psychological factors can impact on physical activity decisions. The thesis concludes with recommendations for future research and for translating existing findings into practice.

For the purposes of the thesis adolescence was defined as being the period “between childhood and adulthood” (Thompson, 1995). Acknowledging that this definition is rather vague, an attempt was made to capture as broad a range of adolescent ages as possible. Some specific details of each study are worth noting, however. In study 1, to best capture all those studies with samples containing at least a percentage of young adolescents or teenagers, studies with a lower age range of 10 years were included, so long as the mean age of that study’s sample was what could sensibly be accepted as being an adolescent age. The focus in study 2 was on 14-16 year old girls. In Leicestershire children transfer from high school to upper school at age 14 and research has shown the school transition period to coincident with the emergence of many barriers to physical activity participation (Mulvihill et al., 2000). This, combined with the fact that these girls were now well into the teenage period with its associated physical activity decline, led to the conclusion that a focus on this specific age group could be very informative. Study three took a broad approach to adolescence, with the participant age range being 11-16. Finally, the chance was taken to explore changes across a two year period in study 4 by examining girls at a very early stage of adolescence at the start of the study, as well as those who were already well into the adolescent period and indeed entering young adulthood by the end of the study.
Chapter 2

Study 1: A systematic review of correlates of physical activity for adolescent girls

2.1 Introduction

In order to understand as fully as possible the reasons behind adolescent girls’ physical activity decisions, a thorough review of the literature is necessary. The majority of the research on this topic has been cross-sectional and exploratory in nature, and vast amounts of variables have been identified as relating to physical activity for adolescent girls. Indeed, researchers have used tools designed to measure in excess of 20 variables at any one time, and so the overall picture has a potential to become hazy and confusing. To enable the clearest portrayal of the data possible, a systematic review of the literature seemed to be the most logical step to take. A systematic review is useful because it allows us to gain a comprehensive understanding of the correlates of physical activity across several studies. It also allows us to identify those gaps in the literature where future research may be required. As argued by Sallis, Prochaska and Taylor (2000), the correlates of physical activity in youth need to be well understood in order that effective interventions can be developed.

Although systematic reviews concentrating on youth in general have been carried out, there have been no reviews examining adolescent girls alone. Sallis et al.’s (2000) review of correlates of physical activity for children and adolescents found adolescent boys to consistently be more active than girls, suggesting that girls’ motivations may well be different to those of boys. A separate review of correlates of physical activity for adolescent girls was therefore deemed necessary.
The purpose of the present review, therefore, was to identify key correlates of physical activity for adolescent girls. Following the precedent set by Sallis et al. (2000), correlates were categorised into the five areas of demographic/biological; psychological/cognitive/emotional; behavioural attributes/skills; social/cultural factors; and physical environment. To add extra depth to the review findings from qualitative literature were also summarized in relation to each of the five areas.

2.2 Method

Computer searches were conducted of MEDLINE (First Search), Web of Science, PsycInfo (BIDS), and SportDiscus for articles in the English language from 1970 to the present day. Manual searches through journals and personal files were also carried out. Key words included: physical activity, youth, adolescent/adolescence, teenage, girl, female, gender, correlates, determinants, motivation, adherence, barriers, enjoyment, importance and support.

Inclusion criteria were as follows: firstly, participants were to be in the age range of 10-18 years, with the mean age to be in the adolescent period, as discussed in Chapter 1. Secondly, for studies investigating males and females, results were included only when reported separately by gender. Male-only samples were excluded. Thirdly, only articles published in the English language were included; therefore excluding unpublished articles, dissertations, and conference proceedings. Whilst it is acknowledged that this approach may lead to the omission of informative research, potential difficulties associated with identifying and locating unpublished items meant that it was deemed most appropriate to exclude such items so that some of these were not included whilst others were excluded. Fourthly, to allow for strength and direction of correlates to be assessed, and to be consistent with Sallis et al., only quantitative studies were included. Finally, owing to the focus of the project on the importance of physical activity for health benefits, studies were included that examined variables for their association with physical activity, sports or exercise for this main reason. Articles with a primary focus on participation for other reasons, such as competition, were excluded.
As in the case of Sallis et al. (2000), variables were classified as being related or not related to physical activity, and the direction of association was noted. Rules for classifying variables regarding the strength of the association with physical activity are summarised in Table 2.1. Statistical significance was employed as the criterion for classifying whether a variable was associated with physical activity or not. Potential correlates were classified into the five previously mentioned categories of demographic/biological; psychological/cognitive/emotional; behavioural attributes/skills; social/cultural factors; and physical environment. Consistent with Sallis et al. variables were only included if they were studied on three or more occasions. Variables using different names but assessing essentially the same construct were combined.

Table 2.1: Rules for classifying variables regarding strength of association with physical activity

<table>
<thead>
<tr>
<th>% of studies supporting association</th>
<th>Summary code</th>
<th>Meaning of code</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-33</td>
<td>0</td>
<td>No association</td>
</tr>
<tr>
<td>34-59</td>
<td>?</td>
<td>Indeterminate, inconsistent</td>
</tr>
<tr>
<td>60-100</td>
<td>+</td>
<td>Positive association</td>
</tr>
<tr>
<td></td>
<td>-</td>
<td>Negative association</td>
</tr>
</tbody>
</table>

When four or more studies supported an association or no association, it was coded as 00, ++, or --.

The studies identified included both cross-sectional and prospective designs. Participants were taken from both school and community samples, and a wide variety of physical activity measures were utilised. The quality of the physical activity measure was coded in line with Sallis et al. (2000) as follows: (a) self-report of poor or unknown reliability/validity, (b) self-report with acceptable reliability/validity, and (c) acceptable objective measure. All included studies were summarized into a data table, presented in Appendix A, detailing what the study measured, sample characteristics, method / design and measures, and results. Data tables, presented in Appendix B, were also created detailing the country in which the study took place, total number of participants, number of female participants, age range and mean age where reported, ethnicity, study design, and quality of the physical activity measure.
As well as identifying the studies to be included in the systematic review, the search approach outlined above also located several interesting qualitative studies, as well as a cross-sectional study that did not measure associations between the specific variables and physical activity, but that was deemed to still contain useful information. To add extra depth and understanding to the review, therefore, the findings from these studies were also summarized under each of the five main category headings. Of the several approaches to synthesising quantitative and qualitative evidence outlined by Dixon-Woods, Agarwal, Jones et al. (2005), this thematic analysis approach and was chosen to be the most appropriate method in this instance owing to the use of the already pre-defined category headings.

2.3 Results

A total of 60 studies yielding 58 independent samples were included in the systematic review. Samples were the unit of analysis. Total sample sizes ranged from 48 to 17,766; female sample sizes ranged from 22 to 9,039, with a mean sample size of 1,097 (SD=1,946), although two studies did not report the number of participants by gender. Only 11 studies (18.3%) were carried out with female participants only. The majority of the studies were conducted in the USA (65%), used a cross-sectional design (81.7%), and assessed physical activity through self-report alone (78.3%). Only four studies (6.7%) were carried out in the United Kingdom. Although this bias towards studies outside of the UK could be problematic when attempting to relate findings to the UK context, no systematic effect for geographical location was detected. Concerning the quality of the physical activity measure, 17.5% were unvalidated self-reports, 62.5% were empirically supported self-reports, and 22% were objective measures (where more than one measure was used the higher quality measure only was considered for this calculation). Table 2.2 summarises sample sizes and quality of physical activity measurement for the studies reviewed. Those studies using a prospective or longitudinal design are also identified; remaining studies are cross-sectional. Whilst the large mean sample size and relatively small number of studies using unvalidated measures were encouraging to note, the wide range of sample sizes, including several studies with less than 100 female participants, and the methodological bias towards cross-sectional studies are limitations to note. Greater
confidence in findings, and therefore conclusions reached, could be placed in studies consistently using larger sample sizes and prospective or longitudinal designs.

Table 2.3 summarises associations between potential correlates and physical activity that were examined in at least three of the studies identified. For each correlate, the column labelled “Related to physical activity” lists those studies that reported a significant association between that variable and physical activity. The “+” or “-” indicates the direction of the association. The column labelled “Unrelated to physical activity” lists those studies that found non-significant associations between the variable and physical activity. The summary code column describes the overall finding for each variable of its association with physical activity, classified as no association, indeterminate/inconsistent, positive association, or negative association (see Table 2.1). Numbers in each of the columns refer to numbers of the papers in the Bibliography (see Appendix C).

### 2.3.1 Demographic and biological variables

Five demographic/biological variables were identified that had been studied three or more times. Of these, gender was the most frequently studied, with 27 of 28 samples (96.4%), reporting being female to be associated with lower levels of physical activity. Nine of the 14 samples (64.3%) examining the relationship between age and physical activity participation reported physical activity to decline as the girls got older. Ethnicity was studied on eight occasions, the finding in seven (87.5%) samples was that being white was associated with higher levels of physical activity. Increased BMI was found to be negatively related to physical activity participation in eight (72.7%) of 11 cases. Finally, higher parental education was studied in four samples; in three cases (75%) this variable was found to be positively associated with physical activity participation.

Data from the additional studies reviewed lent support to the findings of adolescent girls being less active than boys. In a study of 11-19 year olds from Northern Ireland (Trew, Scully, Kremer, & Ogle, 1999), self-reported sport activity for girls totaled only 53% of that reported by boys. A cluster analysis of the same adolescents revealed that girls made up only 19% of the cluster of youngsters who were highly
Table 2.2: Summary of sample sizes and quality of physical activity measurement of studies reviewed

<table>
<thead>
<tr>
<th>Female sample size (N)</th>
<th>Studies (Bibliography No.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;100</td>
<td>5, 13, 14, 15, 18, 26, 30, 37, 48, 54</td>
</tr>
<tr>
<td>100-199</td>
<td>11, 16, 24, 33, 39, 40, 49, 50, 52, 53, 56, 57</td>
</tr>
<tr>
<td>200-299</td>
<td>9, 12, 23, 27, 35, 38, 47, 51</td>
</tr>
<tr>
<td>300-399</td>
<td>41, 43, 45</td>
</tr>
<tr>
<td>400-499</td>
<td>10, 32, 44</td>
</tr>
<tr>
<td>500-999</td>
<td>2, 3, 6, 7, 8, 29, 42, 59, 60</td>
</tr>
<tr>
<td>1000-2999</td>
<td>1, 19, 28, 31, 34, 46, 55, 58</td>
</tr>
<tr>
<td>3000-4999</td>
<td></td>
</tr>
<tr>
<td>5000+</td>
<td>4, 20, 21, 22, 25</td>
</tr>
</tbody>
</table>

**Physical activity measure**

| Self-report of poor or unknown reliability/validity | 2, 3, 11, 13, 14, 20, 21, 22, 25, 27, 29, 42, 44, 45, 50, 51, 60 |
| Self-report with acceptable reliability/validity | 1, 4, 5, 6, 7, 8, 9, 10, 11, 12, 15, 16, 17, 19, 23, 24, 26, 28, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, |
| Acceptable objective measure                      | 40, 41, 43, 46, 47, 49, 50, 52, 55, 56, 57, 58, 59, 60 |

**Design**

| Prospective design | 4, 43, 46 |
| Longitudinal design | 1, 20, 21, 22, 28, 41, 57 |
Table 2.3: Summary of studies of correlates of adolescent girls' physical activity

<table>
<thead>
<tr>
<th>Correlate</th>
<th>Related to physical activity</th>
<th>Assoc. (-/+)</th>
<th>Unrelated to physical activity (biblio. no.)</th>
<th>Summary code</th>
<th>Assoc.</th>
<th>% of studies</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Demographic/biological</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gender (female)</td>
<td>2, 3, 9, 10, 11, 12, 17, 20, 24, 25, 29, 30, 32, 33, 36, 37, 38, 40, 42, 48, 52, 53, 54, 56, 58, 59, 60</td>
<td>-</td>
<td>26</td>
<td></td>
<td>-</td>
<td>96.4%</td>
</tr>
<tr>
<td>Age</td>
<td>7, 9, 20, 28, 33, 36, 45, 48, 59</td>
<td>-</td>
<td>13, 14, 23, 46, 53</td>
<td></td>
<td>++</td>
<td>64.3%</td>
</tr>
<tr>
<td>Ethnicity (white)</td>
<td>7, 19, 20, 21, 28, 31, 55</td>
<td>+</td>
<td>53</td>
<td>+</td>
<td>87.5%</td>
<td></td>
</tr>
<tr>
<td>Increased BMI</td>
<td>4, 17, 22, 23, 28, 41, 44, 51</td>
<td>-</td>
<td>26, 45</td>
<td>-</td>
<td>72.7%</td>
<td></td>
</tr>
<tr>
<td>Higher parental education</td>
<td>28, 36, 46</td>
<td>+</td>
<td>45</td>
<td>+</td>
<td>75%</td>
<td></td>
</tr>
<tr>
<td><strong>Psychological/cognitive/emotional factors</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Belief in importance and benefits</td>
<td>32, 44, 45, 46, 53</td>
<td>+</td>
<td></td>
<td>++</td>
<td>100%</td>
<td></td>
</tr>
<tr>
<td>Enjoy it/like it/fun</td>
<td>9, 43, 44, 49, 52, 54, 56, 57</td>
<td>+</td>
<td>13</td>
<td>++</td>
<td>80%</td>
<td></td>
</tr>
<tr>
<td>General self-efficacy</td>
<td>8 (Caucasian), 8 (African American), 9, 34, 35, 36, 41, 53, 54, 55 (Caucasian), 55 (Black), 59</td>
<td>+</td>
<td></td>
<td>++</td>
<td>100%</td>
<td></td>
</tr>
<tr>
<td>Perceived sport competence</td>
<td>6, 12, 40, 42, 50</td>
<td>+</td>
<td>18</td>
<td>++</td>
<td>71.4%</td>
<td></td>
</tr>
<tr>
<td></td>
<td>15</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Body image/attractiveness</td>
<td>5, 12, 15, 23, 40, 57, 60</td>
<td>+</td>
<td></td>
<td>++</td>
<td>100%</td>
<td></td>
</tr>
<tr>
<td>Weight &amp; appearance concerns</td>
<td>45, 46, 50</td>
<td>+</td>
<td>32</td>
<td>+</td>
<td>75%</td>
<td></td>
</tr>
<tr>
<td>Physical self-worth</td>
<td>5, 12, 40, 48</td>
<td>+</td>
<td></td>
<td>++</td>
<td>100%</td>
<td></td>
</tr>
<tr>
<td>Perceived barriers</td>
<td>8 (Caucasian), 44, 45, 60</td>
<td>-</td>
<td></td>
<td>--</td>
<td>100%</td>
<td></td>
</tr>
<tr>
<td>Perceived lack of time</td>
<td>35, 44, 45, 57</td>
<td>-</td>
<td></td>
<td>--</td>
<td>100%</td>
<td></td>
</tr>
<tr>
<td>Correlate</td>
<td>Related to physical activity</td>
<td>Assoc. (-/+)</td>
<td>Unrelated to physical activity (biblio. no.)</td>
<td>Summary code</td>
<td></td>
<td></td>
</tr>
<tr>
<td>----------------------------------</td>
<td>-----------------------------</td>
<td>--------------</td>
<td>---------------------------------------------</td>
<td>---------------</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Behavioural</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Smoking</td>
<td>1, 16, 28</td>
<td>-</td>
<td>45</td>
<td>-</td>
<td>75%</td>
<td></td>
</tr>
<tr>
<td>TV viewing/video/internet use</td>
<td>7, 17, 38, 54</td>
<td>-</td>
<td>27, 53</td>
<td>?</td>
<td>57.1%</td>
<td></td>
</tr>
<tr>
<td>Participation in organised sports</td>
<td>7, 8 (Caucasian), 8 (African American), 16, 45, 52</td>
<td>+</td>
<td></td>
<td>++</td>
<td>100%</td>
<td></td>
</tr>
<tr>
<td><strong>Social/cultural variables</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Peer support/influence and</td>
<td>35, 43, 50, 57</td>
<td>+</td>
<td>14, 47, 54</td>
<td>?</td>
<td>57.1%</td>
<td></td>
</tr>
<tr>
<td>acceptance</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Family support</td>
<td>8 (African American), 31, 32, 35, 36, 43, 44, 60</td>
<td>+</td>
<td>14</td>
<td>++</td>
<td>88.9%</td>
<td></td>
</tr>
<tr>
<td>Mother participates</td>
<td>36, 38, 39, 52</td>
<td>+</td>
<td>13, 14, 53</td>
<td>?</td>
<td>50%</td>
<td></td>
</tr>
<tr>
<td>Father participates</td>
<td>36, 38, 39</td>
<td>+</td>
<td>14, 53</td>
<td>+</td>
<td>60%</td>
<td></td>
</tr>
<tr>
<td><strong>Physical environment</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No correlates identified</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>
involved in sports, a similar finding to that of Wang and Biddle (2001) in a large study of adolescents in England. Findings concerning the remaining demographic and biological variables were limited to those included in the systematic review only.

2.3.2 Psychological, cognitive and emotional variables

A total of nine psychological, cognitive and emotional variables were found to have been studied three or more times. Belief in the importance and benefits of being physically active was positively associated with participation in all five samples that measured this variable, as was a perception of physical activity being fun and enjoyable (eight of 10 studies). Self-efficacy was measured on 12 occasions and was consistently found to be positively related to physical activity participation. Perceived sport competence was positively associated with physical activity in five (71.4%) of the seven samples measuring this variable. Body image/attractiveness was consistently positively associated with participation (seven of seven samples), whilst weight and appearance concerns were positively associated with participation in three (75%) of the four samples to measure this variable. Physical self-worth was measured on four occasions and was found to be consistently positively related to physical activity participation. Finally, both general perceived barriers (four of four samples) and a perceived lack of time (four of four samples) were consistently negatively related to physical activity participation.

Qualitative data in relation to psychological variables added extra depth in the four key areas of the benefits of being physically active, enjoyment of physical activity, body image and appearance concerns, and barriers to being physically active. With reference to the benefits of being physically active, the review of this additional literature helped to identify a variety of benefits that adolescent girls felt to be relevant to them. The two main benefits identified related to weight loss and improved appearance (Biscomb, Matheson, Beckerman, Tungatt, & Jarrett, 2000; Flintoff & Scraton, 2001; Park & Wright, 2000; Sleap & Wormald, 2001; Taylor, Yancey, & Leslie, 1999), and generally staying fit and healthy (Flintoff & Scraton, 2001; Kientzler, 1999; Park & Wright, 2000; Sleap & Wormald, 2001; Taylor, et al., 1999). The role of physical activity in making one feel good or better (Flintoff & Scraton, 2001; Sleap & Wormald, 2001; Taylor, et al., 1999), in managing stress
(Sleap & Wormald, 2001), and in increasing confidence (Sleap & Wormald, 2001) was also noted. Finally, physical activity was noted to be sociable in its nature (Biscomb et al., 2000; Flintoff & Scraton, 2001; Sleap & Wormald, 2001; Watson, Poczwardowski, & Eisenman, 2000). Fun and enjoyment were reported to contribute to physical activity participation in a number of qualitative studies (Biscomb et al., 2000; Kientzler, 1999; Park & Wright, 2000; Sleap & Wormald, 2001; Taylor, et al., 1999; Watson et al., 2000). For instance, girls in Taylor et al.’s study (1999) expressed a preference for activities that they considered to be fun, such as dancing and basketball, over other, less enjoyable activities, whilst Park and Wright (2000) and Sleap and Wormald (2001) reported fun and enjoyment in their studies to be associated with the opportunities provided to meet and socialize with other people. Enjoyment was also associated by some with competitive activity (Park & Wright, 2000), showing the different meanings that can be attached to enjoyment of physical activity by different individuals.

The qualitative literature also identified that body image and appearance concerns can have both a positive and a negative impact on physical activity participation. Whilst body image satisfaction and an importance attached to physical appearance were on the one hand reported to positively relate to physical activity participation (Biscomb et al., 2000; James, 2000; Sleap & Wormald, 2001), feelings of self-conscious over one’s appearance were on the other hand identified as interfering with participation for many adolescent girls (James, 2000; Taylor, Yancey, & Leslie, 1999). Based on her study of the experiences of Australian adolescent girls at swimming pools, James (2000) proposed a model of five categories of girl comprising Achievers, who felt good about their bodies and had high participation levels, Rationalisers, who felt self-conscious but talked themselves into participating anyway, Compromisers, who felt self-conscious and developed coping strategies to allow themselves to participate, Spectators, who would sit on the side of the pool fully clothed, and Avoiders, who would make excuses to avoid a swimming pool altogether. This categorization illustrates the levels on which issues relating to body image and appearance concerns can relate to adolescent girls’ physical activity behaviour.
Finally, examination of the qualitative literature enabled an identification of some of the barriers reported most often to interfere with physical activity participation. Although no one barrier was unanimously stated to have a negative impact on participation, both Flintoff and Scraton (2001) and Sleap and Wormald (2001) identified the barriers of school work, paid employment, a lack of transport, and a lack of time as being problematic for adolescent girls. Other barriers identified related to a lack of opportunities (Flintoff & Scraton, 2001; Taylor, et al., 1999), a lack of funding (Coakley & White, 1992; Sleap & Wormald, 2001), and bad weather (Sleap & Wormald, 2001).

2.3.3 Behavioural variables

Only three behavioural variables were studied on three or more occasions – smoking, TV viewing/video/internet use, and participation in organised sport. Smoking was found to be negatively associated with physical activity participation among three of the four samples to examine this variable. Seven samples examined the relationship between TV viewing / video / internet use and physical activity participation; in four cases (57.1%) this relationship was found to be negative, in one sample it was positive, in the remaining two samples no association was found. The relationship between TV viewing / video / internet use was therefore concluded to be indeterminate. Five studies with six independent samples all found participation in organised sport to be positively associated with physical activity participation.

Behavioural variables were not found to have been studied qualitatively, perhaps indicating an area for future research, for example by examining why some youngsters prefer to watch TV or use the internet than be physically active, and how these people might be persuaded to be less sedentary.

2.3.4 Social/cultural variables

Four social/cultural variables were studied three or more times. Peer support / influence and acceptance was found to have an indeterminate relationship with physical activity participation, four of seven samples (57.1%) finding a positive association and three samples finding no association. Family support was positively related to physical activity participation in eight (88.9%) of nine samples. The
relationship of mother's participation to daughter's participation was indeterminate, four (50%) of eight samples finding this association to be positive, one sample finding it to be negative, and three samples reporting no association. Father's participation was positively associated in three of five cases (60%).

In relation to peers, participation with friends was identified by several qualitative studies as contributing to physical activity participation (Biscomb et al., 2000; Flintoff 
& Scraton, 2001; Kientzler, 1999; Park & Wright, 2000; Sleap & Wormald, 2001; Taylor, et al., 1999; Watson et al., 2000). Whilst some of the studies identified that participation was dependent on having a friend there (Biscomb et al., 2000; Flintoff & Scraton, 2001), others noted that times of physical activity were simply a chance to be sociable and spend time with friends (Park & Wright, 2000; Sleap & Wormald, 2001; Taylor, et al., 1999). Sleap and Wormald (2001) also noted that peers can be influenced by the examples of friends and choose to be active when they may not have previously considered it, and that friends' support and encouragement was also helpful in this regard.

With reference to the family, the qualitative studies added little extra dimension. Both Flintoff and Scraton (2001) and Taylor et al. (1999) identified that participation with the family was associated by their participants with higher overall participation, whilst Coakley and White (1992) and Sleap and Wormald (2001) reported that parental support and encouragement was instrumental in activity decisions for girls in their studies. Disappointingly though, none of the qualitative studies examined the roles played by mother and father, and whether these roles differed in terms of role modeling, being active with their daughters, and offering support and encouragement.

2.3.5 Physical environment

No one physical environmental variable was found to have been studied on three or more occasions. Neither had aspects of the physical environment been studied using a qualitative approach.
2.4 Discussion

It is important to understand the correlates of physical activity in teenage girls so that variables consistently associated with physical activity can be identified and used to inform interventions, policy initiatives, and associated practical guidelines. Previous reviews of the literature have concentrated on youth in general rather than assessing individually the factors influencing the likelihood of adolescent girls or boys to be physically active. In this review, several variables were found to relate to adolescent girls’ physical activity participation, meaning that interventions based on one single factor are unlikely to be as successful as those based on an attempted understanding of the complex inter-relationships between these many variables.

This review followed the format Sallis of et al. (2000), who reviewed correlates of physical activity among children and adolescents of both genders. Several similarities between the two reviews existed but some notable differences did emerge. The main difference between the two reviews lies in the number of variables reported to have been studied on three or more occasions and the strength of associations found between each variable and physical activity. Whereas Sallis et al. identified 48 variables that had been studied in adolescents, in this review a total of only 21 variables were found to have been examined. Furthermore, in Sallis et al.’s review, only 35% of variables were found to be consistently related to physical activity, whilst in this review a consistent association existed for all but three (85.7%) of the variables identified. The most likely explanation for these differences lies in the fact that in this review studies were only included if they researched either girls only or presented results separately for girls and boys. Whilst the smaller number of potential correlates identified perhaps indicates a need for a broadening of the research lens for adolescent girls, the consistent strong relationships between physical activity and the studied variables seems to lend support for the importance of researching correlates of physical activity separately by gender.

This argument is further supported by the fact that over the same time period and including a five year update, this review located only six studies more than that of Sallis et al. (2000). Furthermore, no studies were located prior to 1990 that examined the correlates of physical activity separately by gender. This perhaps indicates the
lack of attention given until recently to physical activity participation by each of the
genders separately. A review of the correlates of activity among the “problem” group
of adolescent girls could therefore be seen as being timely to enable us to assess the
state of the field and understand where future research attempts need to lie.

Looking at each of the categories of correlates in turn, certain similarities and
differences between this review and that of Sallis et al. (2000) can be seen:

Both reviews showed that being female and being older are both associated with
lower levels of physical activity. These highly consistent findings can now be
accepted as extremely robust in young people (Biddle, Gorely, & Stensel, 2004). The
task here then is to identify those variables that might explain why older adolescent
girls are less active. It is probable that several factors will be working in combination,
most likely making this task a particularly arduous one.

Whilst increased body mass index was found to be negatively related to physical
activity in 72.7% of the samples in this review, Sallis et al. found only inconsistent
results. This inconsistency is reflected in the literature review of the Health Education
Authority (1997) of physical activity among young people of both genders. It is
difficult to be clear whether the finding in the present study is due to the often
reported increased body-consciousness among adolescent girls, making many larger
girls too embarrassed to participate in physical activity, or whether the recent trends in
rising obesity account for a strengthening of this relationship.

Both this review and that of Sallis et al. (2000) found that white adolescents were
more likely to be active than those from other ethnic groups. Whereas Sallis et al.
found socio-economic status to be unrelated to physical activity, however, it was
found to only have been studied twice in relation to adolescent girls and so was not
included in the review. It is likely that this previous finding of SES being unrelated to
physical activity can be accounted for by the role of school activities in the total
physical activity of young people. However, as time allocated to physical education
in schools continues to decline, differences in participation due to socio-economic
factors may become more apparent. Further consideration of SES variables, such as
availability of transport or funds, is warranted. As McElroy (2002) states, the primary
significance of socio-economic status (or ‘social class’) is that it determines life choices.

Whereas Sallis et al. (2000) found the perceived benefits of physical activity to be inconsistently associated with participation and enjoyment of exercise to have no association, the present review found both of these variables to be consistently positively related to physical activity, with findings from the qualitative studies indicating the types of benefits of being active identified by adolescent girls. Our findings, however, are in line with those of the 1996 Surgeon General’s Report on physical activity; the strong association between enjoyment and physical activity is also confirmed by research among children and youth closer to home (Health Education Authority, 1992; Biddle, 1999; Mason, 1995).

Psychological theories of motivation have shown that enjoyment is associated with perceptions of competence, and that feeling competent and having a task orientation are linked to higher levels of intrinsic motivation (Biddle & Mutrie, 2001). Although task motivation had been studied insufficient times to allow conclusions to be drawn, perceived competence was positively associated with physical activity in this review. This confirms the previous findings of Sallis et al. (2000).

Self-efficacy was found to be consistently related to physical activity among adolescent girls. Again, this differs from the findings of Sallis et al. (2000), who found an inconsistent relationship for self-efficacy among adolescents of both genders. The finding of the Surgeon General’s Report (U.S. Department of Health and Human Services, 1996) that self-efficacy was positively associated with physical activity lends some weight to the findings of the present review but further research might be necessary here to tease out the true relationship of this variable to both adolescent girls’ and boys’ physical activity participation. Since the present review concentrated on adolescent girls only whilst the two others concentrated on both girls and boys a useful starting point here might be to summarise the existing findings for girls and boys separately. Such a summary could identify whether the role of self-efficacy is different for each gender, thus providing gender-specific ways forward.
The two appearance related variables of body image/attractiveness and weight and appearance concerns were both found to be positively related to physical activity. Whilst Sallis et al. (2000) did not report any findings associated with weight and appearance concerns, perceived physical appearance/body image was found to relate inconsistently with physical activity in their review. The relationship between body image and appearance concerns and physical activity, however, could be seen as a complicated one: whilst some girls who are happy with their appearances might cheerfully take part in all manner of physical activities, others might take the view that since they are fine as they are there is no need for them to be physically active. Equally, some girls who view themselves as being overweight or unattractive might engage in higher levels of activity in order to improve their appearance whilst others may feel ashamed of their bodies and hide away. This suggestion is borne out by the findings of the qualitative studies, and research of an exploratory nature might be helpful in identifying how these factors affect different girls in different ways. An example might be to identify sub-groups of girls of varying body sizes, self-perceptions, and levels of physical activity and to interview these girls in depth about their body image related physical activity barriers and motivators. Such research could be truly informative in identifying some of the several different ways in which body image and appearance related concerns can work in relation to physical activity.

Although Sallis et al. found there to be no association between general barriers and physical activity, it seems sensible to assume that our finding that greater perceived barriers seem to inhibit physical activity is logical, and the findings from the qualitative literature indicate some of the barriers that can operate. Our review suggested that a perceived lack of time may be particularly important, especially as it relates to such factors as school work and part time jobs, which may take priority over physical activity as girls enter adolescence. Indeed, Mulvihill, Rivers, & Aggleton (2000) have shown that barriers such as perceived time pressure from homework emerge during the time of transition to secondary school. It is possible, however, that statements concerning barriers may merely reflect the lack of priority afforded by adolescent girls to being physically active. Whilst programmes to increase physical activity may not be able to reduce a true lack of time due to homework or part time jobs, changes in priorities during free time could be addressed. Clearly the challenge here is to elevate the status of physical activity so that adolescent girls choose to
afford it some time. Given the findings of the present review it seems likely that a successful way of doing this might be to offer fun and sociable activities of an informal nature. Providers or activity might also benefit from emphasising to time pressured girls the ability of physical activity to reduce stress. One possibility here might be an organized walking programme: here girls could chat with friends whilst walking and the provision of safe and clearly identified routes would reduce a potential barrier of not knowing where to walk or simply not bothering to think of route. The fact that no specialist equipment other than a pair of sensible shoes is necessary means that cost barriers could also be kept to a minimum.

Concerning psychological correlates then, physical activity can be seen to be clearly associated with 'intrinsic motivation' – that is, motivation for its own sake and for enjoyment and pleasure. Activity was associated with enjoyment and perceived competence. In addition, more active girls had higher self-efficacy, and more positive physical self-perceptions. This is a positive profile that can be targeted through interventions that emphasise enjoyable physical activities, allow for self-improvement and personal challenge, and that de-emphasise the importance of ability and appearance. Teachers, coaches and others in leadership roles need to maximise opportunities for the development of these qualities.

The behavioural variable of smoking was found to be inversely related to sport and physical activity. Although Sallis et al. (2000) found the association between smoking and physical activity to be inconsistent, it is likely that smoking may act as an inhibitor from a physiological point of view. It may also reflect social and cultural values towards lifestyle.

An inconsistent relationship was found between TV viewing / video / internet use and adolescent girls' physical activity, whilst Sallis et al. (2000) found overall sedentary time, including TV viewing and use of video games, to be unrelated to physical activity among adolescents of both genders. TV viewing has not been consistently associated with physical activity participation in the past, and more extensive reviews suggest that the relationship between TV viewing and physical activity is not particularly strong (Gorely, Marshall, & Biddle, 2004; Marshall, Biddle, Gorely, Cameron, & Murdey, 2004). Further research is needed here to clarify the picture; this
could take an exploratory approach aiming to identify the ways in which new technologies are more appealing than physical activity to some adolescent girls, and how physical activity could compete.

In the present review participation in organised sports / sports teams was found to be consistently positively related to physical activity participation; Sallis et al.'s review also found a consistent relationship between the similar variable of community sports and physical activity participation. Given that people involved in organised sports have clearly chosen an active leisure-time pursuit, this finding is unsurprising. However, it might be a mistake to think that 'the answer' is to have all adolescent girls playing organised sport as it is unlikely that this type of activity will appeal to all. There are many forms of physical activity and these all need to be exploited to maximise participation. Those who do wish to play organised sport should be provided with opportunities and suitably encouraged. For others, we must provide either a sporting environment that is more appealing than at present or seek other opportunities for physical activity, such as active transport.

Sallis et al. found peer support to have an inconsistent association with physical activity, as did the present review. However, support for the role of friends comes from the qualitative literature reviewed, from the 1996 Surgeon General's Report on physical activity (U.S. Department of Health and Human Services, 1996), which found peer support to be related to physical activity participation, and from Wold and Hendry (1998), whose own review of the literature lent evidence to the argument that physically active adolescents have friends who are also active. Wold and Hendry argued that peer group influence could function in three possible ways:

- Adolescents could mutually influence each other into starting exercise;
- An adolescent may take up a sport that his or her friend already participates in;
- Friendships could be established between adolescents who take part in particular sports together.

Research has also suggested that as a child approaches adolescence, peer group pressure and the sense of belonging to a group becomes increasingly important to
them (National Dairy Council Nutrition Service). Further research might take into account age group differences to determine whether peer support becomes more influential as adolescent girls increase in age.

The role of the family was also seen to be important to adolescent girls in this review: although mother’s participation was only inconsistently related to daughter’s participation, positive relationships were found for both family support and father’s participation. Although Sallis et al. (2000) found no association for parent activity/modeling, both direct parental help in physical activity and parents’ support were found to relate positively to daughter’s physical activity participation. Whilst research has indicated a lessening of the influence of adults as adolescence approaches (Buhrmester & Furman, 1987), some evidence suggests that the family may be a more important determinant of participation than peers or school and that within the family, parents may be more influential than siblings (Lewko & Greendorfer, 1998). Although, the role of parents in physical activity for adolescent girls requires greater scrutiny, suggestions that it is the combined support of family and friends that encourages young people to be active (Lewko & Greendorfer, 1998; Reynolds, Killen, Bryson, et al., 1990) seem to be well founded. The importance of significant others in adolescent girls’ physical activity participation should not be overlooked in the design and implementation of interventions.

Physical environmental variables, such as availability and use of facilities, or environmental factors thought to enhance physical activity opportunities (Humpel, Owen, & Leslie, 2002; Lawlor, Ness, Cope, et al., 2003), are receiving increased interest among physical activity researchers. Sallis et al. only located three environmental variables that had been studied on three or more occasions in adolescents; of these equipment/supplies available and sports media influence were found to be unrelated to physical activity, while a positive association was found for the rather vaguely titled opportunities to exercise. The present review found that no one environmental variable had been studied on three or more occasions in relation to adolescent girls’ physical activity participation, nor had aspects of the physical environment been considered by any of the qualitative studies, indicating how under-researched this area is.
The importance of physical environmental variables is likely to increase as the built environment develops at a pace. This may have significant effects on our physical activity, potentially creating what might be referred to as 'activity toxic environments', in which personal transport is less likely to involve a great deal of energy expenditure (Haines, McMichael, Anderson, & Houghton, 2000). Indeed, in the UK, less than 9% of 7-8 year olds now travel to school unaccompanied by an adult, in comparison to 80% in the early 1970s. This has been attributed to parental fear of traffic (Davis, 1999). As stated by Frank and Engelke (2002), "the relative costs and benefits of the locational and travel choices that are currently available have resulted in a built environment designed to accommodate the car – at the measurable expense of the ability to move about under human power" (p. 8). It is clear that much more needs to be known about the perceptions of adolescent girls concerning their physical environment and how this might impact physical activity levels.

To summarise, 21 variables were found to be associated with physical activity in adolescent girls, many of these confirming the findings of previous reviews. It is important to distinguish, however, between modifiable and non-modifiable correlates so that effective interventions can be devised. Kahn (2002) argues that interventions effect change in the modifiable determinants which, in turn, change physical activity behaviours. One might argue, therefore, that interventions in themselves do not change behaviour, rather it is the change in one or a set of correlates that brings about change.

Many of the correlates identified in the present review can be seen as modifiable and provide the basis for interventions and policies. Correlates that are not considered modifiable, such as gender, age and ethnicity, should be used to guide targeted interventions and policies. For example, older girls who have lower rates of physical activity participation might be considered to be an at risk group and so specific campaigns may be targeted at them through the use of age group and gender appropriate materials. Of those correlates that are considered modifiable, some will be harder to change than others, and so may be a lower priority for policy initiatives and interventions.
Of the 21 correlates identified, therefore, which might be the most useful in terms of intervention and policy design and implementation? Three promising clusters of correlates are identified:

1. **Positive psychology:** The research reviewed here suggests that we should ensure that physical activity environments are created for girls that are enjoyable and emphasise self-improvement, choice, and perceptions of competence and confidence and de-emphasise the importance of appearance. Such environments are likely to lead to increased physical self-worth, more positive perceptions of physical activity and, as a result, greater perseverance.

2. **Organised sport:** The evidence here consistently suggests that physical activity levels will be higher for those girls involved in organised sport. Indeed, one large study in Iceland found that involvement in organised sport largely accounted for the gender difference in overall physical activity (Vilhjalmsson & Kristjansdottir, 2003):

   "Efforts to further mobilise children and adolescents and reduce gender disparities in physical activity should consider ways in which organised sports clubs and programs cater to and enrol children and youth. By reflecting girls' and women's as well as boys' and men's perspectives and interests, offering a broader array of sports and exercises, and developing linkages with the primary school system, we believe organised sport programs could recruit more children and adolescents into sport and exercise, and reduce or eliminate gender disparities."

A comparison of physical activities between youth in Glasgow and those in Dunedin in New Zealand (West, Reeder, Milne, & Poulton, 2002) also supported the view that opportunities for sport participation, particularly through extra-curricula school sport, are important in explaining some of the gender differences in physical activity. This study concluded by suggesting that the dramatic decline in participation in later adolescence "testifies to the importance of the school in maintaining participation up to the time of school-leaving. In the post-school period, continued involvement is principally a
function both of community based opportunity structures and cultural values. In both these respects the Glasgow cohort, and particularly Glasgow females, fared badly”.

3. Social Support: The evidence points to the importance of a group of variables centred on social support, including peer involvement and support, family and parental support, and parental physical activity. Although the evidence here is somewhat disparate, there appears to be merit in promoting the importance of sport and physical activity for adolescent girls to both family units and peer groups. Evidence exists for the importance of social connectedness as a fundamental human motivator, and one that if satisfied leads to greater intrinsic motivation (Ryan & Deci, 2000). Conclusions that social support is key to adolescent girls’ physical activity participation are therefore warranted, although further analysis may be required in future studies, for example to identify how the influence of friends and family changes across the adolescent years, whether the role of the mother differs to that of the father, and the specific ways in which significant others can influence behaviour (for example through modeling, emotional support, pressure to be active or otherwise, or volunteering to participate in activities together).

Certain limitations to the present study are noted. Firstly, the lack of UK studies may be of concern to those wishing to extend findings to this population specifically. Indeed of the 21 variables identified in this review, only six were found to have been studied in UK based samples. Despite this, the findings of the UK studies generally concurred with those of the oversees studies and so it would seem reasonable to assume that the results presented here are robust. Given that the findings for the majority of variables were consistent regardless of location, it may be considered more appropriate to advise that future research concentrates on some of the many variables, such as those relating to the physical environment, that have yet to be studied in sufficient depth to allow conclusions to be drawn.

A further weakness lies in the fact that the literature, while reporting studies of some magnitude, is replete with weak designs and contains a relative number of measures of poor or unknown validity. Notwithstanding the fact that it is extremely difficult to
measure physical activity accurately in young people, and that all available measures have substantial error and known limitations (Montoye, Kemper, Saris, & Washburn, 1996), it is also possible that fewer significant associations would be found in studies that relied on unvalidated self-report measures (Sallis et al., 2000). Attempts could be made to rectify this situation with the development, validation and use of a standard physical activity measure. Attempts in future research to move away from the heavily relied on cross-sectional design would also be useful.

Certain methodological issues are also worthy of consideration. Although extensive searches through both computer and personal files were undertaken, it is entirely possible that articles were missed in the retrieval process. Further, the decision to include only published research may well have precluded informative unpublished work from being considered. Finally, the bias in the literature against publishing studies containing non-significant findings may well have affected the overall results of this review.

2.5 Conclusion

In conclusion, 60 papers were identified that between them had studied a total of 21 variables on three or more occasions. Qualitative papers were also reviewed to add depth to the findings. Based on the evidence available, three groups of correlates centred around positive psychology, organised sport, and social support were deemed to be most promising in guiding effective interventions and policy development. It is likely, however, that important physical environmental variables have yet to be clearly identified. Despite certain methodological considerations relating to both this review and the research examined, the emphasis on correlates of physical activity in adolescent girls alone makes this review extremely useful and informative to both researchers and practitioners interested in this key population.
Chapter 3

Study 2: A focus group study of factors influencing adolescent girls’ physical activity decisions

3.1 Introduction

Although the review of the literature identified several variables that have been found to be associated with physical activity participation, many of these variables had been studied on only a handful of occasions, meaning that only tentative conclusions could be drawn. Furthermore, some potentially very important correlates have yet to be studied sufficiently to allow conclusions of any nature to be drawn, whilst many factors appear to have not been studied at all.

The review also highlighted the problem that whilst some large-scale studies are reported, the literature is replete with small studies, weak designs and measures of weak and unknown validity. Many of the studies are cross-sectional in design, meaning that although we understand a variable to be associated with physical activity participation, we are unable to differentiate the factors that encourage the adoption of physical activity from those that help maintain or increase involvement, and those that cause involvement to decrease or even cease. Examining girls’ motivations through in-depth qualitative research allows us to examine the reasons behind their behaviour and choices and to therefore understand better their motives for their physical activity-related decisions.

The literature review informed us that being older and being female are associated with lower levels of physical activity. These findings corroborate those of Sallis et al. (2000) and are highly consistent findings that can now be accepted as being extremely robust in young people. Qualitative research has also indicated that many barriers to physical activity emerge during the time of transition to secondary school (Mulvihill
et al., 2000). The school system in Leicestershire is somewhat different to many parts of the UK in that children attend high school from the ages of 10-14 and then move on to an upper school/community college at age 14. The combination of these factors led to the conclusion that for this study it would be most appropriate to target girls aged 14-16. This would allow access to older adolescents but would also mean that the transition from high school to upper school would be relatively fresh in the girls’ minds, making reflections on this time period easier.

The purpose of this study, therefore, was to start to build a comprehensive picture of physical activity as it relates to these older adolescent girls. Since the review of the literature had identified so many unanswered questions and gaps in our knowledge, it was deemed more appropriate to approach the study in an open-mannered fashion than to set rigid hypotheses that may or may not explain adequately the phenomenon under investigation. Accordingly, the following research questions were posed:

- What factors influence adolescent girls’ likelihood of being physically active or inactive?
- How or why do these factors play their role in girls’ physical activity decisions?
- What can be done to encourage adolescent girls to become more physically active?

3.2 Method

3.2.1 Participants

Participants were 47 girls aged 14 to 16 years, 23 in year 10 and 24 in year 11, at an upper school/community college in a village in Leicestershire. Of these girls, six from year 10 and seven from year 11 were studying GCSE PE, and those studying GCSE PE were interviewed in separate groups to those who were not. It was intended that by speaking to girls who were studying GCSE PE as well as those who were not, as wide a range as possible of interest and participation levels in sport and physical activity would be represented. The girls were predominantly white European. Socio-economic status was not measured.
3.2.2 Study approach

Exploratory focus group interviews were chosen as the most appropriate tool for this study for a number of reasons. Focus groups are considered to be a “friendly research method” (Morgan & Krueger, 1993) that “allow access to research participants who may find one-on-one, face-to-face interaction ‘scary’ or intimidating” (Madriz, 2000). Sleap and Wormald (2001) argue that for young women who feel threatened in a one-on-one situation, the presence of friends can lead to an “open and confident expression of opinions”.

Focus groups also allow interaction to occur not only between the moderator and the participants, but also between and amongst the participants themselves, thus enabling access to a variety of topics that may not otherwise have been discussed in an individual interview (Morgan & Krueger, 1993).

Finally, focus groups are a suitable method when investigating complex behaviour and motivations (Morgan, 1998), as is the case when examining adolescent girls’ choices regarding physical activity and inactivity. As Morgan (1998) points out:

> “Many of the behaviors that researchers wish to understand are not matters of conscious importance in everyday life. As the participants in a focus group hear others talk, however, they can easily tell whether what they are hearing fits their own situation. By comparing and contrasting, they can become more explicit about their own views. In addition, they may find that answering questions from the moderator and other participants makes them aware of things that they had not thought about before.” (p58)

Some limitations of focus groups are acknowledged: Firstly, more outgoing participants may dominate the conversations whilst those who are quieter and perhaps shy simply disappear into the background (Krueger, 1998). Krueger suggests strategies for suppressing dominant talkers such as thanking them for their comments and asking for others’ points of view, or avoiding eye contact with the talker. For shy participants he recommends maximizing eye contact and calling on that person by
name to provide comment. By using these techniques I tried to remain conscious of
the balance of the conversations and involve all participants as much as possible.

Secondly, participants can be inattentive and lose their place in the conversation or
can often wander off the topic under discussion, something which seemed to happen
quite frequently with these groups of girls, who would have quite cheerfully discussed
other important topics such as hair, make-up and boys for the entire session had I let
them! Krueger’s (1998) advice in these cases is to call an inattentive participant by
their name, repeat the question, and ask if they would like to comment on this issue.
For those who wander off the subject he recommends letting the conversation run for
20 or 30 seconds before discontinuing eye contact and using body language to make it
clear to the speaker that you are no longer interested in what they have to say. As
soon as they pause, you should be ready with your next question. Where this advice
didn’t work, I simply explained to the girls in a friendly manner that we had moved
off the topic at hand and now it was time to revert to the relevant subject.

The topics for discussion were derived primarily from the gaps in current knowledge
identified by the systematic review of the literature. In addition, continuing
stereotypes regarding the appropriateness for girls of certain sports and activities
(Riemer & Visio, 2003), along with evidence suggesting that girls should look and act
in a certain manner to be perceived as being feminine (Cockerill & Hardy, 1987), led
to a certain focus being placed on the concept of femininity, and how it related to
physical activity participation for these girls. It is important to be clear, however, that
this focus did not dominate the discussions, and physical activity was considered from
whichever viewpoints the participants felt to be relevant to them.

Since the focus groups were designed to be exploratory in their nature, the questions
and subject areas were devised to be used for guidance only. A strict order of
questioning was not followed, and the content of the discussions was guided as much
by the information provided by the girls during the conversations as it was by the
topic list. To further ensure that key factors had not been overlooked, the participants
were asked at the end of each discussion if there was anything they would like to add
or if there was anything we should have discussed but had not. This is in line with the
notion of the Final Question as defined by Krueger (1998).
Two further characteristics of the structure of the focus groups are noteworthy: Firstly, to take account of the broad focus on physical activity participation for health benefits, all types of sport, exercise or physical activity were repeatedly emphasized to be equally valid. Unfortunately, the fact that the girls had been removed from a PE class to take part in the discussions led to the conversations often reverting to school based PE. Although I repeatedly attempted to emphasise the broad focus on all types of activity both in and out of school, the continued returning of the participants to school PE means that responses may not be appropriate in some cases to other contexts. This is a limitation to note. Secondly, the nature of the questions was adjusted for the two discussion groups held with the girls studying GCSE PE, not only to take account of their increased interest and activity levels, but also to obtain their thoughts and opinions on other girls’ reasons for choosing to be inactive, and on how best to promote activity to these less active girls. Interview schedules for the GCSE PE and the non-PE groups are included in Appendix D.

3.2.3 Procedure
The sessions took place between December 2001 and March 2002. The girls were split into eight groups, four each of years 10 and 11. Each group comprised of between five and seven participants. The participants for each group were selected in association with two of the college’s PE teachers, who were asked to take a random sample of girls representing a broad range of physical activity levels out of the beginning of their PE class. The selected girls were then taken by one of the PE teachers to a quiet room in the college where the interviews were to take place. Before the sessions began the girls were informed of the purposes and aims of the discussion. They were told that the interviews would be tape recorded but that any information they gave was confidential. They were also told that they were free to leave the room at any time to return to their classes. They were then asked to sign consent forms, shown in Appendix E, indicating that they understood everything that had been explained to them, and the sessions then commenced. Each session lasted approximately 45 minutes. The groups took an unstructured and informal format and the girls were asked to speak about their experiences as openly and honestly as possible. It was emphasised that there were no right or wrong answers and that all
viewpoints were equally valid. Ethical guidelines of the British Psychological Society were adhered to throughout.

3.2.4 Data analysis

Initial analysis commenced immediately upon return to the office after each focus group with the preparation of a short report, or fieldnotes (Bogdan & Biklen, 1982). These fieldnotes detailed any identifying characteristics of the group or individuals within it, how forthcoming the participants had been and whether I felt their answers had been restrained by issues such as shyness or embarrassment in front of their peers. I summarised the key themes discussed, and identified any interesting points that had been raised and any ideas that I felt to be emerging. I also noted any concerns I had relating to questions I had asked, the way the group had been conducted, or the behaviour of individuals within the group. I summarised how successful overall I felt the focus group had been, and I drew comparisons between this and previous groups.

The next stage was to transcribe verbatim the conversations, and this was done as soon as possible after each group. Once all of the focus groups were transcribed, I read through each manuscript several times to thoroughly familiarise myself with the data.

The data were analysed inductively to allow the discovery of codes, themes and categories (Patton, 2002). The unit of analysis was the quote. Using an iterative process, meaningful quotes were first identified. A constant comparison method (Glaser & Strauss, 1967) was implemented in which quotes were continually compared with one another. Quotes considered to represent the same meaning were clustered together and assigned a label, whilst quotes considered to represent a different concept were given a new label. All of the data was searched until all meaningful data had been identified, and clustered and labelled. The resulting labels were then scrutinised and organised into themes, each theme comprising labels considered to be conceptually similar. Analysis of these themes revealed that they could be grouped together under two main category headings, namely those themes falling under the category heading of “Aspects Relating to the Teenage Culture” and those considered to be “Other Factors Having a Possible Effect on Physical Activity”. Following the recommendation of Tesch (1990), the whole process remained flexible,
meaning that labels, themes and categories could be modified and refined until the most "reasonable" reconstruction of the data’ had been developed (Lincoln & Guba, 1985).

3.2.5 Trustworthiness of the data

Lincoln and Guba (1985) propose that good qualitative research must be trustworthy. The question of trustworthiness asks To what extent can we place confidence in the outcomes of the study? and Do we believe what the researcher has reported? (Maykut & Morehouse, 1994). Lincoln and Guba (1985) propose several criteria upon which to judge the trustworthiness of research. These, and their relevance to this study, are outlined below:

1. Multiple methods of data collection: Maykut and Morehouse (1994) argue that combining interviews and observations from the field with reviews of relevant documents increases the likelihood that the phenomenon of interest is being understood from various points of view and ways of knowing. Throughout this study relevant documents and literature were accessed and reviewed as findings emerged from the data. Just as the data had been assessed using the constant comparative method, so too were the findings of this study compared to those of other studies. Trustworthiness of the data would also have been increased by measuring aspects under investigation in other ways, for example by the use of paper and pen measures of physical activity behaviours, or thoughts and attitudes relating to physical activity. Unfortunately, the limited time available with each group led to the decision that completing additional measures was not feasible. A future improvement here might be to ask the girls to complete selected measures prior to the group discussion. These measures could then be used to inform the discussion in a very specific manner.

2. Building an audit trail: Throughout the study all processes were documented and these documents were stored in a safe place. The audit trail for this study comprises the interview schedules, the brief reports written after each focus group, the full transcript of each focus group, and notes and outcomes from each stage of the analysis process. Interview
schedules are shown in Appendix D; further audit trail material is shown in Appendix F. This material comprises an example post focus group report, a section of a transcript, and an example work through of some analysis, showing how quotes were compared and contrasted to be arranged into labels, themes, and finally categories. By documenting the research process in this manner, any person unfamiliar with the project can be walked through the entire process to enable them to understand the study and the decisions made within it, and to judge the trustworthiness of the outcomes (Maykut & Morehouse, 1994).

3. Working with a research team: Maykut and Morehouse (1994) assert that by working as part of a team, team members can act as "peer debriefers", keeping each other honest (Lincoln & Guba, 1985). Due to this study being conducted as part of my PhD, it was essentially a one man operation. Throughout the study, however, I sought frequent guidance and confirmation from people external to the project, representing various fields of knowledge within the areas of physical activity and health, exercise psychology, and pedagogy, to ensure that my interpretations of the data were as accurate and appropriate as possible. My supervisor was also consulted at all stages of the study, his opinions and feedback regarding the analysis of the data were sought and considered, and appropriate actions were taken. Seeking the advice and opinions of people external to the project in this manner has the advantage of raising questions of bias where necessary (Maykut & Morehouse, 1994).

4. Member checks: Lincoln and Guba (1985) use this term to refer to asking the participants to confirm that the conclusions you have reached from your data are accurate, and this process can be ongoing throughout the research and/or can take place at the end. In this study, participants were frequently asked during the focus groups to clarify and expand on points they had made. Questions were often rephrased and repeated and answers were fed back to confirm that an appropriate understanding of the participants’ responses had been reached. At the end of each focus group I summarised the key points that had been discussed and asked the participants to confirm that my interpretation of what they had told me was accurate. It is acknowledged, however, that although clarifying the
discussion points in this manner ensured that my understanding of the data was clear and accurate, this does not constitute true member checking. Suggestions to improve on this in future studies would be to send participants a copy, or summary version, of the final report and ask for their feedback on this report. Another alternative would be to ask to meet with the participants again and discuss through the findings with them, allowing for an interactive exchange of views on the accuracy of the conclusions reached.

3.3 Findings and Discussion

As can be seen from Table 3.1, a total of nine themes were identified that fell into the two main category headings of “Aspects relating to the teenage culture”, and “Other factors having a possible effect on physical activity”. “Aspects relating to the teenage culture” refers to statements made that exemplified how girls’ decisions whether or not to be active were influenced to a great extent by “norms” attached to being a teenage girl. This group contained five main themes, named feminine stereotypes, self-presentational issues, boys, priorities, and the desired structure of physical activity. In addition, four main themes were identified that, whilst not governed by this teenage culture, were still considered to have possible effects on girls’ decisions concerning physical activity. These themes were named enjoyment, significant others, benefits of being active, and barriers to being active. The two main categories and the themes contained within them will now be discussed in more detail. It is important to note throughout the following presentation of the findings that since each of the girls was only seen on one occasion for one class period, time did not allow for either an objective measure of physical activity or a subjective self-report paper and pencil measure. General physical activity levels were, therefore, estimated based on the girls’ verbal reports of their hobbies and interests, and how active they considered themselves to be. It is not intended that assessing physical activity in this way will provide an accurate picture of activity levels of the girls involved in the study. It is hoped, however, that by assessing different attitudes to and levels of interest and participation in physical activity, the viewpoints of girls representing a variety of opinions can be expressed.
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<th>Category</th>
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<td>Personal Reasons</td>
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<td>External Barriers</td>
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- The difference a good or bad teacher can make
- No clear pattern for active gifts
- Active gifts parents might of whom young
- Active gifts receive more parental encouragement
- Active gifts receive more parental encouragement
- Employment as a major difference between those who do it and those who do not
- Don't involve too much exertion
- Make it fun and informal in nature
- With friends, it's more enjoyable
- The desired stimulus of exercise
- Changing priorities when becoming a cancerer
- Boys who haven't been involved in physical activity
- Self-preserventional concerns related to the presence of other people
- Valdify related self-preservational concerns
- Appearance related self-preservational concerns

- Self-preservational issues
- Active gifts challenging the stereotypes promoting physical activity and
- Reluctance to participate and undermine forming image
- Defined differences between feminine and masculine gifts
- Licensed culture
- Gender relating to the
- Remaining stereotypes

Table 3.1: Categorizes themes and labels identified by analysis of focus group data
3.3.1 Aspects relating to the teenage culture

It quickly became apparent that many of the girls' decisions regarding physical activity were governed to a greater or lesser extent by what they considered "normal and appropriate" behaviour for teenage girls in today's society. These girls had preconceived ideas of how they should look and act and many were unwilling to confront and behave outside of these pre-defined norms in case doing so challenged their own and others' opinions of them as looking and behaving in a suitable manner. This is consistent with the work of Cockerill and Hardy (1987), who found pressure to conform to gender norms to be particularly important at this age, with those who do not conform risking being seen as either immature or sexually 'abnormal'.

3.3.1.1 Feminine stereotypes

In line with the work of Cockerill and Hardy (1987), the girls were asked to think of someone they regarded as 'feminine' and someone they regarded as 'unfeminine' and to consider how the two might differ. The girls held very strong stereotypical views regarding what constituted feminine or unfeminine appearance and actions amongst themselves and their peers. They defined feminine girls as being more concerned with appearance and clothes and less concerned with exercise or being active. These girls, they stated, would not embrace the idea of being active and ruining their appearances. In instances where they were active, feminine girls would be reluctant to become overly involved and would be scared of the rough and tumble of more physical activities:

"Well you don't want to play rugby or something coz you get all muddy."

"I've got a mate that I tried getting into rugby and she was like "oh I'll break a nail" and it was just like (makes groaning noise)."

Unfeminine girls, on the other hand, were seen as being more active, less self-conscious over their appearance whilst being active, muscular, and interested in sports traditionally perceived as being masculine, such as rugby.
Cockerill and Hardy (1987) found similar perceived appearance and physical activity related differences between feminine and unfeminine girls. In their study, feminine girls were reported to be fashionable, neat and tidy, slim, well turned out in ‘feminine’ skirts and dresses, jewellery and make up, to have styled hair, and to take time and care over their appearance. Unfeminine girls were seen to be scruffy, have a bad figure, to wear trainers, trousers and jeans, and little make up or jewellery, to have short ‘boyish’ hair, and to take little time or care over their appearance. In relation to sport and physical activity interests, feminine girls were seen as having little or no interest in sport, with a particular dislike for rough and violent sports or for getting wet, dirty or messy, preferring to be indoors, being inactive and unenergetic, and where they did participate in sports or physical activity, preferring traditionally ‘feminine’ pastimes, such as disco dancing and netball. Unfeminine girls, however, were reported to enjoy being outside and to not mind getting dirty, wet or messy, to be active, energetic and sporty, to enjoy rough and violent sports, and to be interested in traditionally masculine pursuits, such as football and rugby.

Consistent with their reported views of femininity, many of the girls in this study were reluctant to be active in case it negatively influenced their feminine images. In particular, they didn’t want to get sweaty during physical activity and were concerned with their appearances afterwards – many girls commented on their concerns regarding messy hair, ruined make up and generally looking untidy:

“*It’s annoying coz you’re all sweaty afterwards and you’ve got like the rest of the day to just be like, totally disgusting.*”

“In my cycle group, erm, all the girls after they’ve been swimming, they’re all moaning that their hair was going curly and they had no make up on and all this stuff like that.”

The girls stressed that if they were to be active then it was vital that they had time to shower, change and make themselves presentable afterwards and a common complaint regarding school activity was that showering facilities were inadequate and not enough time was allocated at the end of school P.E. classes for the girls to tend to their appearances:
"They don’t give us time to get ready."

"And there’s no hairdryers or anything so ..."

A qualitative study of African American and Latino adolescent girls also found these appearance related issues to act as barriers to being physically active (Taylor, et al., 1999). The girls in this study reported concerns about physical activity spoiling their hair and make up and expressed a dislike of sweating. They complained that there was not enough time to shower at the end of P.E. classes or that shower facilities were not available. Similarly, Cockerill and Hardy (1987) reported that “adolescent girls may experience conflict between the demands of the P.E. lesson and the need to preserve their carefully constructed feminine image”. Girls in their study reported feminine girls as not liking to mess up their hairstyles or take off jewellery and make up for P.E., not liking to get dirty during P.E., and not having enough time to shower and make themselves presentable after the P.E. lesson.

It was interesting to note that a difference arose between active and inactive girls whereby the more active girls were prepared to challenge these stereotypes and not be governed by the prescribed norms of how to behave. Many of these girls felt that it was possible to be both sporty and feminine at the same time, and challenged other people’s stereotypes of them as less feminine just because they were active:

"Coz I play rugby, it’s supposedly a man’s sport, I get called like “manbeast” and things like that and you get that off all the boys ... I’m not that bothered but I have seen girls that have got really bothered and self conscious about it and they’ve stopped playing rugby and it’s like letting themselves down coz of other people ... I used to be going dancing on a Saturday and playing rugby on a Sunday and everyone thought that was weird because I was doing a girly sport and a man’s sport."

One possible explanation for this difference between the more and less active girls lies in the concept of androgyny, which suggests that it is possible to possess both masculine and feminine personality traits (Henderson, Stalnaker, & Taylor, 1988). According to Woodhill and Samuels (2004), “the androgynous person can best be seen as one who can engage freely in both feminine and masculine behaviours and as
one who is equally capable of both feminine and masculine tasks and does not prefer one above the other. Androgynous people are sensitive to feminine and masculine cues in their social environment and can engage in whatever behaviour seems most effective in any given situation. Gender stereotyped people, on the other hand, may be seriously restricted in the range of behaviours available to them as they move from situation to situation throughout their daily activities. So androgynous people can competently perform tasks associated with either sex." Support for this concept in relation to sport participation comes from Salminen (1990), who found that androgynous and masculine girls aged 10 to 16 years participated in sports traditionally seen as male appropriate more often than feminine girls.

To promote physical activity to adolescent girls, those who were more active suggested that it may be useful to identify positive feminine role models in the media who were both beautiful and active. Identification of such role models, they felt, might encourage less active girls to question their pre-defined ideas regarding femininity, thereby realising that to be active would be acceptable for them:

"Yeah but it's like, it's hard, but you know Julia Roberts? She had an interview and like look how perfect a figure she's got yeah? And she goes to the gym, like, nearly every day and like, you don't have to do weights or owt but just, oh yeah, she's perfect, she's just, and she's had to work at being like that."

This point demonstrates that more active girls at least see that it is possible to be both feminine and physically active. Indeed, recent research has identified that wanting to look like popular media figures is associated with higher levels of physical activity (Taveras, Rifas-Shiman, Field, et al., 2004). As the authors point out, however, it is vital if role models are going to promoted in this way that media industries take great care to promote realistic and healthy norms of physical activity and body image instead of unattainable ideals that could prove counter-productive to youngsters' motivation and psychological well-being. Indeed, Berry and Howe (2004) found that appearance-based exercise advertising had negative effects on non-exercisers' attitudes towards exercise, whilst a meta-analysis conducted by Groesz, Levine and Murmen (2002) also revealed that media representations of thin women can negatively influence body image. For this reason, Field, Cheung, Wolf, et al. (1999) recommend
the media should refrain from relying on models who are severely underweight, and should instead print more articles on the benefits of physical activity.

3.3.1.2 Self-presentational issues

Self-presentation has been defined as the ways in which people attempt to control the impressions they make on others (Leary & Kowalski, 1995). Self-presentational concerns may be associated with either increased or decreased exercise behaviour (Leary, 1992): for some people exercise may be prompted by self-presentational concerns such as the desire for a fit and lean physique whilst for others, self-presentational concerns about being perceived as overweight, uncoordinated or unfit may deter exercise participation (Hausenblas, Brewer, & Van Raalte, 2004).

Self-presentation can be influential in decisions over whether or not to be physically active through social physique anxiety (Hart, Leary, & Rejeski, 1989), that is the fear that one's body will be negatively evaluated, or through concerns that one will be unable to make the desired impression owing to a lack of skills or strength required to perform the task at hand (Leary, 1992). Such self-presentational concerns may lead individuals to choose to exercise alone rather than appearing incompetent (Leary, 1992) or even to not exercise at all. Consistent with these definitions, self-presentational issues in this study were seen to be influential in three main ways: through appearance-related concerns, ability concerns, and concerns related to the presence of others, most notably strangers.

Several of the girls expressed appearance-related concerns both during physical activity and when changing and preparing for activity. A common cause of discomfort was changing in front of others, and many girls spoke of feeling self-conscious and comparing themselves to others they considered to be “skinnier” or more beautiful than themselves:

“So, and it's just like some of the girls are skinnier than other girls and like, you just think 'oh god, they're skinnier than me'.”

“We’ve got, erm, what’s her surname? It’s Sarah, tall, blonde hair ... We’ve got her in our group. Try following that.”
Being seen in a swimming costume was extremely threatening to these girls and many avoided swimming altogether so as not to have to cope with such an unpleasant experience. Those who did swim had devised various strategies to overcome their discomfort, such as wearing a t-shirt over their swimming costume or running and jumping into the pool as quickly as possible:

“I’m alright once I’m in the water, it’s just like walking out with just your swimming costume on when you’ve got a whole row of people sitting watching ...”

“I just wear a top for it but I can’t let people see what I’m wearing or not.”

“I mean I do but I just run and jump in straight away don’t I? With a towel wrapped round me.”

These self-presentational concerns have been documented elsewhere. Sleap and Wormald (2001) found that participants often felt embarrassed when showering naked in front of others, some avoiding this by showering in swimming costumes. In the same study, one participant reported not wanting to do physical activity because she was wearing shorts and she felt her legs to be fatter than other girls'; a girl in another study recalled feeling anxious when walking through the school grounds in her P.E. kit to attend a lunchtime team practice (Biscomb et al., 2000). A study in Australia of adolescent girls’ experiences at swimming pools (James, 2000) also found that girls felt discomfort and embarrassment when they felt that they were being watched by other people. Many of the girls in James’ study reported comparing their bodies to those of other girls they felt to be prettier or slimmer, whilst others felt uncomfortable when wearing only their swimming costumes in front of boys. Many had also developed coping strategies to make their swimming experiences more bearable, including wrapping a towel around themselves and only removing it at the last moment, wearing a t-shirt whilst swimming, and going to a different pool where they could be confident that nobody knew them.

Appearance-related concerns regarding being overweight were considered to be both a motivator and a barrier to physical activity. Many of the more active girls spoke of their overweight friends being too embarrassed to be active and yet on the other hand
being active as a means of avoiding becoming overweight was mentioned time and again throughout the conversations. Additionally some girls did speak of being spurred on to become more active if they noticed they had gained some weight. It was clear that the issue of weight was very important to these girls: as one girl stated, "nobody wants to be fat", and for those who did perceive themselves to be overweight, hiding away so as not to draw attention to themselves seemed to be their best option.

Concerns over weight are again well documented in the literature. Zabinski, Saelens, Stein, et al. (2003) found that overweight girls reported higher body-related barriers to physical activity than did non-overweight girls. The most common barriers for overweight girls in this study were body consciousness and concern about others seeing their bodies whilst being active. Ingledew and Sullivan (2002) found female adolescents to be more motivated to be active by weight management concerns than males, especially if they perceived themselves to be overweight and if they wanted to be slimmer. Similarly, in a prospective survey of American adolescent females, Saxena, Borzekowski and Rickert (2002) found trying to lose weight to be significantly associated with regular vigorous exercise.

Worries over what boys might think of them contributed to additional appearance-related concern for the girls in the present study. It seemed that the girls did not want to engage in any behaviours that might compromise the boys' opinions of them as attractive and feminine beings. As some of the girls pointed out, since these might be boys that they would like to date in the future, the boys' opinions did matter to them, and so they did not want the boys to be put off them if they were sweaty and untidy. As a result of this, several of the girls expressed concerns over their appearance in front of boys during school P.E. and other physical activity sessions, and many spoke of a preference for having single sex school swimming lessons so that the boys would not see them in their swimming costumes:

"I think that's why most girls are not going to do PE coz of the boys, I mean swimming, coz of the boys coz they all think "ooh god, what are they gonna think of me?", ... so I reckon that's why some girls are not doing it."
Adolescent girls in a recent study in the North East of England also reported feeling uncomfortable in front of boys when their bodies were on display in either swimming costumes or short games skirts (Flintoff & Scraton, 2001). Here, some of the girls had successfully negotiated with their P.E. teachers to be able to wear leggings or tracksuit bottoms instead of short games skirts. Those who still wore compulsory P.E. kit expressed a preference for single sex P.E. where the boys could not see their bodies. If participating in mixed groups the girls felt that they became quieter than usual owing to their worries that the boys would make embarrassing comments.

In the present study, those who were more physically active and who enjoyed being active expressed less appearance-related concerns than did those who found physical activity to be unenjoyable. These girls spoke of “being prepared to give it a go” and overcoming their concerns, and seemed to be happy to just get on with the task at hand regardless of how they thought they looked:

“Well I think it’s fun, I don’t really, I’m not really bothered about what people think. I think some people are a bit bothered about how they look in front of some people but I don’t really mind that much about what people think of me so that’s why I probably like it, I’m not sure.”

“Erm, sometimes I do get self-conscious but then if I like the sport then I’ll join in anyway like, whatever, so ...”

“I don’t think it matters because you just feel self-conscious in the beginning and then after you start enjoying it you don’t care.”

It seems it would be appropriate, therefore, to concentrate on making physical activity an enjoyable experience and to emphasise that it is something all girls can participate in equally, regardless of size, shape or any related concerns.

Self-presentational concerns were frequently expressed regarding a lack of ability and many of the girls claimed to worry about what others thought of them when engaged in activities they considered themselves to be incompetent at. Several of the girls who considered themselves to be less able made normative references to other, more able,
girls, and some girls also spoke of feeling inferior in their abilities when comparing themselves to the boys in mixed P.E. lessons. An additional problem relating to boys also arose in that many of the girls expressed discomfort with boys seeing them engaged in activities that they were not good at, as they did not want to appear incompetent to the very people whose opinions were so important to them. These findings correspond to those of Sleap and Wormald (2001), whose focus group participants commented frequently on concerns related to a lack of competence and confidence in physical activity, and Bauer, Yang and Austin (2004), who found that girls often felt embarrassed when participating in activities they were not good at, especially if they were around boys who they felt to often be more able than them.

Consistent with Leary’s (1992) contention that some individuals choose to exercise alone rather than appearing incompetent, a few of the girls spoke of preferring to pursue certain activities, such as running, alone so as not to have to contend with the feeling of having others witness their poor performances. Many of the girls also expressed that they would not go to a group activity alone if they felt themselves to not be particularly good at it as this would be too embarrassing for them. For these girls, being surrounded by close friends that they trusted made for a more comfortable environment in which they could relax and not have to worry so much about their self-presentational concerns.

Fairclough (2003) found perceived competence and enjoyment in English secondary school girls to be moderately correlated, a finding which was reflected in the present study. Several of the girls, especially those who felt themselves to be less able, felt that higher ability resulted in higher enjoyment, mainly due to feelings of self-consciousness when participating in activities in which they felt less able:

“You enjoy it more if you are better at it coz you don’t feel as self conscious then about everyone watching you when you’re doing bad.”

“Yeah coz you get embarrassed and you think everyone’s looking at you and laughing about what you’ve just done and stuff.”
As stated, this seemed to be especially the case amongst more inactive girls, whilst those who were more active appeared to be more prepared to just “give it a go” and seemed to enjoy themselves in most activities regardless of their ability level.

Finally in relation to self-presentational issues, the girls spoke of feeling uncomfortable in the presence of strangers. Many felt much more comfortable when in the company of friends only and would actively seek out situations in which they could almost guarantee there would be no strangers around. Several of the girls simply refused to entertain the idea of taking part in activities where they knew strangers would be present. For example, one girl professed to enjoying swimming but would not go to her local leisure centre to do so as the thought of being amongst people she did not know was just too threatening for her:

“I don’t go swimming outside of school to like the leisure centre with my friends, I just say no, I don’t, I enjoy swimming I just don’t like going coz like all the people ... ”

This concern with being seen by people they did not know was also evident amongst girls in James’ (2000) study. One girl, for example, declared that strangers would often “just gawk at you and stare at you and you feel really weird”.

Yet again, the differences between more and less active girls were evident here, with the more active girls stating that the opinions of those they didn’t know were irrelevant to them. As some of these girls pointed out, they were doing an activity they wanted to do with other people who also wanted to do it and so there was no need to be concerned with these other people’s opinions of them:

“Plus when you’re outside of school everyone’s there because they want to swim and they want to train whereas if you do it school it’s they’re there because they want to have or want to play in the canoes or whatever and it’s different so ... ”

3.3.1.3 Boys’ bad behaviour

The girls’ self-presentational concerns regarding boys have already been discussed. Boys were also seen to influence the girls’ physical activity choices through their negative attitudes towards the girls and through treating the girls in what the girls
considered to be an inappropriate manner. The boys were reported to engage in a variety of unpleasant behaviours during school P.E. classes, including teasing the girls and making nasty comments, being overly competitive to prove that they were better at various activities than girls, laughing at the girls if they made mistakes, and excluding the girls from various games, for example by passing the ball to boys only during hockey or football:

"Well, either like, coz we have mixed games we either like, it'll be like basketball and the guys are passing to each other and then we won't see the ball at all or it'll be something like rounders and I'll be jumping up and down and screaming and ...”

"Coz like the boys right, they want to take over. Like in football they kick the ball harder than us and like, they all think they're better and when we do volleyball sometimes they take over and ...”

This finding replicates that of Flintoff and Scraton (2001), who reported girls avoiding activities such as football or basketball due to boys dominating the play. Some of the girls who reported themselves to be more active took it upon themselves to prove that girls could be just as good as boys and refused to be undermined by this hostile behaviour. For the majority, however, the boys' actions seemed to leave them feeling more self-conscious and unwilling to participate:

"Like the people that aren't as good as the boys, I think that's what puts some girls off coz the boys just laugh at them and rip them to pieces and they just, coz we're like, really sensitive, they just take it to heart and just don't realise that they're not that good themselves."

"I know but if one of them says something really horrible you do think about it and it does affect you."

"Yeah I think it would coz like, you're gonna go out with the boys and that so, yeah."
3.3.1.4 Priorities

Biscomb et al. (2000) identified among their participants “teenage reasons” to not participate in physical activity. These included going out more, spending more time with friends, and spending Saturday afternoon in town. Returning to the present study, all of the girls spoke of the increasing importance of their social lives as they moved through their teenage years. Spending time with friends and boyfriends, watching films, going shopping, and going out in the evenings were all activities that the girls were becoming more involved in. Differences arose between the more and less active girls, however, in terms of how they dealt with this increased social activity and how sport and physical activity now fitted into their lives. The less active girls tended not to consider physical activity and there was a general feeling that, for these girls at least, being “sporty” simply did not fit in with what teenage girls do and thus their identities as teenage girls. The more active girls, on the other hand, still made time to be active and ensured that this remained a priority. It seemed to be the case that whereas the less active girls were content to fit in with the prescribed norms of physical activity for their age group, those who were more active were autonomous enough to put what was personally important to them above what was considered to be culturally important. This did not mean that the active girls made no time to follow the more social pursuits, and indeed many of them complained of the pressures of fitting both physical activity and socialising into their lives:

“And sometimes your friends, coz they’re not always as sporty as you they just don’t want to do it so you just like, do what they want to do ... Yeah coz sometimes you do want to do sport but there’s a film you want to watch or something and your friend wants to watch the film rather than doing sport so you have to watch the film.”

“It’s a bit like that with my boyfriend as well isn’t it? ... He’s like “oh don’t go training tonight, come round mine” ... and you’re like “no, I’ve gotta, I wanna go training”. As much as you wanna see your boyfriend, you’ve got, “hang on, which is gonna be for life?” You know what I mean? ... With a boyfriend you don’t know if it’s gonna be for life or not do you?”

These active girls, however, were simply not prepared to sacrifice the sports and activities that they enjoyed so much simply because it was expected that they would
now take part more in other activities. Of course this may have simply reflected individual differences and preferences regarding sport or other physical activity. Indeed both active and inactive girls spoke of how some people might prefer to do other things, such as playing the piano or painting, whilst many of the active girls planned to use sport in their future lives and careers. It was certainly clear that whilst many of the girls were starting to question the place of sport and physical activity in their lives now, those who remained active did so simply because it was what they had always done. Physical activity was intrinsic to these girls and they had no need to question its importance or whether they would continue to do it. It may well be the case then that the personal importance attached to physical activity upon entering the adolescent years is a determining factor in whether girls will continue to be active or will instead choose to conform to the norms attached to being a teenage girl where physical activity is not considered to be important.

3.3.1.5 The desired structure of physical activity

Whilst the more intrinsically motivated girls were content to carry on their sports and physical activity regardless of the environment around them, if the less active girls were to be persuaded to be active, there were certain conditions that had to be met. Most importantly, it was crucial that they had their friends around them. Not only did their friends provide comfort in times of insecurity, owing to the various concerns attached to being physically active, but they also helped to make the activity itself more enjoyable. Indeed several of the girls spoke of how much more fun physical activity was when their friends were with them, and how boring it was to participate alone:

“It makes it loads more fun if you do it with your mates.”

“So you can have a laugh with them and do exercise at the same time.”

“Oh I wouldn’t be able to exercise without mates, it’s so boring.”

In addition, several girls pointed out that their friends would encourage them to keep going if a sport or activity was becoming tough:
"Erm, I have done but like, when I run with someone else you've got the encouragement to keep going."

It was generally acknowledged that the closer the friend the better, but in the absence of a friend, the knowledge that other girls of a similar age would be participating was often enough to make these girls feel comfortable. The thought of being active without friends or peers, however, was extremely threatening to these girls and many simply would not entertain the idea of being active in such an environment:

"Yeah I wouldn't want to go on my own I don't think."

"I'd run around trying to find someone to come with me."

"I don't know, I just wouldn't feel as good without someone there that you know? You're like by yourself and you don't know anybody, you're just watching in case you get something wrong or make a mistake and like, you don't know anyone and just ... that."

The importance of friends to adolescent girls' physical activity participation has been well documented. Flintoff and Scraton (2001) found that participation for many young women was dependent on having either same sex friends or mothers to go along with. Similarly, Biscomb et al. (2000) reported that being able to participate with a friend was considered very important. If a friend did drop out, this could threaten the "stability and commitment of the individual's participation". Participants in Taylor et al.'s (1999) study reported spending most of their free time with friends, with their friends' attitudes and behaviours having a great influence on whether or not they chose to exercise. Finally, Hassandra, Goudas and Chroni (2003) reported that participation among Greek boys and girls was heavily influenced by a need for both peer interaction and peer approval.

The second factor that the girls identified as being crucial to their participation was that any physical activity should be fun, informal and unstructured in its nature, a finding in line with that of Petlichkof (1992), who reported fun to be a key reason for youth participation in physical activity. The girls didn't want to work too hard and
wanted to feel that any physical activity they were doing was purely for enjoyment's sake. They were not concerned with whether physical activity was good for them and certainly didn't care for the repetitive nature of fitness enhancing activities. For them the ideal activity simply involved laughing and having fun with their friends, and if they happened to be increasing their fitness at the same time, then that was simply an incidental side effect of what they were doing:

"Kind of knowing that you're exercising but not putting hard work into it ... But not stuff like having to jog on the spot for like, half an hour."

"If you get into a game, say a basketball game, if you get into it and you're having fun then that's great coz you don't want to stop. I always feel really fit after I've had a basketball game."

"Yeah but when it's like star jump, star jump, it's boring."

Girls in Sleap and Wormald's (2001) study were also reported to dislike activities involving exertion and effort. Many of these girls were reported to dread P.E. lessons owing to feelings of being pushed too hard and made to do activities they found difficult. Participants in Saxena et al.'s (2002) study who did not exercise regularly reported, amongst other reasons, finding exercise too painful and not liking to sweat. Based on his findings, Fairclough (2003) proposed that engaging students in team games may be beneficial as the enjoyment they experience during this type of activity may be great enough to detract from the unpleasant feelings associated with higher levels of exertion. The combined evidence from this and the other reported studies certainly seems to suggest that this could well be the case.(Bungum, Pate, Dowda, & Vincent, 1999; Ingledew & Sullivan, 2002; Motl, Dishman, Saunders, et al., 2001; Sallis, Prochaska, Taylor, Hill, & Geraci, 1999; Sallis, Taylor, Dowda, Freedson, & Pate, 2002; Smith, 1999; Viira & Raudsepp, 2000, 2003; Weinberg, Tenenbaum, McKenzie, et al., 2000)
3.3.2 Other factors having a possible effect on physical activity

In addition to those aspects relating to the teenage culture, certain other themes were identified that had the potential to impact on the girls' physical activity decisions. These themes were grouped under the four main headings of enjoyment, significant others, benefits of being active, and barriers to being active.

3.3.2.1 Enjoyment

Although enjoyment has been mentioned in relation to several other influential factors, its importance is such that it merits a separate discussion. Enjoyment emerged as a common theme running throughout the discussions and seemed to be the one single factor that independently influenced how active these girls chose to be. Level of enjoyment of a given activity was identified as the major difference between those who chose to do it or not. The more active girls often stated that enjoyment was their main reason for pursuing a sporting or active interest, and these girls spoke of how those who did not enjoy physical activity were simply not going to do it:

"I just don't think they enjoy it so they just don't do it ... coz you can't really force them into doing sport if they're not going to enjoy it coz it's just a waste of time for the teachers and for them."

This finding is echoed in research into children's participation in competitive sport which suggests that the degree to which children enjoy sport is almost always found to be one of their primary reasons for participating or dropping out (Gill, Gross, & Huddleston, 1983; Gould, Feltz, Horn, & Weiss, 1982; Gould, Feltz, & Weiss, 1985).

It seemed to be the case that those who were more active got a buzz out of doing it and it was this buzz that made it enjoyable and made them want to continue participating. It was unclear from these discussions, however, what it was about the sport or physical activity the caused this buzz to come about. Future research should examine this area further with a view to understanding further the nature of enjoyment for adolescent girls. Although enjoyment has traditionally remained an elusive concept for sport and exercise psychologists (Biddle, 1999), two approaches to enjoyment may prove promising in this area:
Csikszentmihalyi (1975) argued that motivation seemed highest when the difficulty of the task was matched by the individual’s personal abilities and skills. This matching led to a state of ‘flow’, or supreme enjoyment and engagement in the task. A mismatch can either lead to boredom, where ability is high but challenge is low, or anxiety, where challenge is high but ability is low. A fruitful line of enquiry might well be to investigate the differences in adolescent girls’ perceived difficulty and ability according to activity level. If a mismatch was found amongst less girls between their abilities and the difficulty of the task, qualitative research could establish what steps might be taken to attempt to achieve a balance to make sport and physical activity more enjoyable.

Scanlan and Lewthwaite (1986) studied 9-14 year old American male youth sport participants and proposed a preliminary model of sport enjoyment based on the two continua of intrinsic – extrinsic and achievement – non-achievement. Predictors of enjoyment in the intrinsic – achievement quadrant refer to personal perceptions of mastery and competence; in the intrinsic non-achievement quadrant to physical movement sensations and excitement; in the extrinsic – achievement quadrant predictors refer to perceptions of competence derived from others, for example social approval; in the extrinsic – non-achievement quadrant they refer to non-performance related factors, such as affiliation (Biddle & Mutrie, 2001, p180). Again, exploratory research might examine how adolescent girls differ according to activity level in terms of their intrinsic – extrinsic and achievement – non-achievement continua with a view to determining if physical activity should be promoted differently to different sub-groups of girls.

3.3.2.2 Significant others

Both parents and teachers were seen to have influences on the girls’ physical activity levels, and in both cases these influences could be either positive or negative.

The role of parents in adolescent girls’ physical activity motivation and participation has been widely researched, and Robertson-Wilson, Baker, Derbyshire and Cote (2003) found families to be the most influential factor in initiating physical activity in both active and inactive females, with parents of active females initiating more physical activity involvement than parents of inactive females. In the present study, it
was noted that more active girls received more parental encouragement than their less active counterparts. These girls also spoke of their parents being active with them and how this helped with their motivation:

"My dad'll take me out running and stuff ... My mum's more interested in my dancing and my dad's just interested in me keeping fit ... So yeah, she pushes me with my dancing but then my dad's like, he looks at it on the other side ... Yeah, he's like 'go on, go round the block a couple of times' ... Yeah coz my dad takes me out training every night and if he didn't take me training I wouldn't have the motivation to do it myself coz when you're on your own it's just not as good."

This difference in support styles between the mother and the father was also documented by Davison, Cutting and Birch (2003), who noted that whilst mothers were more likely to enrol their daughters in sports and to support them at sporting events, fathers were more likely to encourage activity through their own behaviour.

Another factor that seemed to unite the more active girls was that their parents got them involved in physical activity when they were young. By the time these girls reached their teenage years, therefore, being active was second nature to them and so not something that they needed to question:

"My mum sort of like told me to start doing gymnastics when I was little, and dancing, I used to do rock climbing as well, when I was like 10, but now I just like doing the dancing."

"My mum got me into dancing coz she used to like it when she was young so I started when I was quite young."

The picture for less active girls seemed a little less clear. Whilst some spoke of their parents trying unsuccessfully to encourage them to be more active, others stated that their parents really made very little effort at all and just left them to their own devices:
"My mum always wants me to do more but she never actually does anything about it, she just says that I should do more but because we might be going swimming every week so we are doing something, we might be anyway."

"My mum tries to make me do more sport because she used to be quite good at it when she was my age and she used to like it and enjoy it but I just, it doesn't really appeal to me, it's just something that I don't really think 'oh no, I've got to get up and do something' and I don't like doing that."

"Well my dad's a coach so he keeps trying to get me back into swimming but I just can't be bothered really. I go to the gym sometimes but he just really pressurises me."

Overall it seemed difficult to establish whether there was any relationship between parent and child activity, although it did tend to follow that whilst more active girls might have either active or inactive parents, the majority of parents of inactive girls were also inactive themselves. When asking the girls about the influence of their parents, however, many did reply with reference to their mothers, suggesting that targeting girls' physical activity through parental influence might be more beneficial when concentrating on the role of the mother.

The difference teachers could make to girls' enjoyment of physical activity was also evident. On the one hand, some of the girls spoke of good teachers making their P.E. classes fun and enjoyable and increasing their motivation. Conversely, however, several of the girls complained about their teachers and how a bad teacher could really put them off physical activity both in and out of school, a finding that replicates that of Hassandra et al. (2003), whose Greek participants reported that unfriendly and uncooperative teachers had put them off their classes:

"He's funny. He puts the boys right in their places and they don't step out of line and it's just really good and he's like 'pass to the girls' and if he doesn't pass he gives them nipple, whatever you call them (giggling, demonstrating what he does)."
"Yeah, and he was just like 'get stuck in girls' and he gives you loads of confidence and stuff."

"It depends on the teachers actually coz one teacher makes it so fun it's unbelievable and the other teacher, I was like, 'do I really have to go PE now?'. He just did nothing, just let us do anything but it was so boring it was unbelievable, I was like, 'no way'. And now we've got the other teacher back so it's cool."

Many male teachers were considered to be sexist in their approach and one girl complained about a teacher who undermined her confidence by constantly comparing her to her more "sporty" sister:

"Sometimes yeah. I'm not being sexist or anything but men teachers always act like boys are best and they're quite sexist and they ... I don't know."

"They sort of tend to expect more from the lads, they cheer lads on but ...

"Yeah, and they just like think oh girls, don't want to do it, blah de blah blah."

"This all happened on the first PE lesson where she just sort of said 'well you're not as good at sport as your sister is are you?' and that's all my confidence really written off now, I can't stand her, like I wouldn't do volleyball coz she was taking it coz she's just horrible, she's just 'you're not as good as your sister are you'."

The problem of sexist teachers has also been documented elsewhere. Girls in Flintoff and Scraton's (2001) study stated that their teachers were only interested in the boys and had low expectations of girls, whilst Taylor et al. (1999) reported that girls in their study felt that the teachers preferred teaching boys and showed them more attention.

One girl spoke about how her teacher at her previous school had been so awful that she now felt put off physical activity for life:
"It's not like that in high school is it? In high school you have to run round the track in, like, three minutes. And they whip you back. And that's when I started hating PE. At high school ... Yes. I hate him (the teacher), I hate PE."

When asked what it might take to persuade her to become more active again, this girl replied that she thought only if she was told she would die otherwise would she resume any kind of physical activity:

"God knows, it's probably have to be like ... Probably if I was told I was going to like die or something if I didn't get more active then I'd probably start and try and do something but other than that ... nothing."

Bauer et al. (2004) also found negative comments from staff to be problematic. Participants in this study felt that criticism could be so upsetting as to lead to feelings of self-consciousness and thus avoiding participating altogether. Clearly the role of the teacher is key in ensuring that these girls have a positive experience of P.E. and physical activity from a very early age, and the importance of creating an appropriate motivational climate in P.E. classes must therefore be stressed. Research into motivational climates in sport and physical activity has been strongly influenced by Ames (1992), whose work in classrooms led to her arguing that the individual's subjective interpretation of the psychological environment is a critical factor in predicting cognitive and affective components of motivation (Ntoumanis & Biddle, 1998). Ames (1992) distinguished between perceptions of mastery and performance motivational climates. In a mastery-orientated motivational climate, individuals are involved in their own decision making, groupings are not based on ability, success is defined and evaluated in terms of individual effort and improvement, and discovery of new learning strategies is encouraged. In a performance-oriented motivational climate, the focus of learning is on interpersonal comparison, evaluation is based on normative standards, groupings are based on ability, and time allocated for learning is inflexible. A meta-analysis by Ntoumanis and Biddle (1999) found that in school physical education, perceptions of a mastery climate were important in increasing and sustaining students' motivation. Specifically they noted that perceptions of a mastery climate were related to high intrinsic interest and positive attitudes towards lessons, intentions to exercise and low anxiety. Perceptions of a performance climate, on the
other hand, were found to be unrelated or negatively related to these cognitive and
behavioural factors. Further evidence for the importance of a mastery-orientated
motivational climate comes from Goudas, Biddle, Fox and Underwood (1995), who
found such a climate to be effective in girls only classes, and Parish and Treasure
(2003), who found perceptions of a mastery-oriented climate to be positively related
to both physical activity behaviour and more self-determined forms of motivation
among 11-14 year old girls and boys in the United States.

3.3.2.3 Benefits of being active
Despite the general feeling that physical activity was not particularly important in the
day to day lives of these girls, they did identify some benefits of being physically
active. These were categorised under the two main headings of health benefits and
personal benefits. Health benefits included having a healthy heart, a feeling of
psychological well-being resulting from being active, and benefits later in life. The
girls also identified that being active could help with weight management, although it
is most likely that for these girls weight management was considered more from an
aesthetic than a health point of view. The girls who were taking the GCSE P.E.
course also identified that being active brought overall fitness improvements but this
was not mentioned by any of the other girls. Aside from these few benefits, however,
no other health benefits were mentioned and the general impression was that being
active to improve one’s health was not something that these girls felt to be important.
This finding echoes that of the HEA (1998) study, which reported that young women
are much more interested in the short term benefits of being active, such as weight
loss, fitness and a sense of well-being, than the long term health benefits. Sleap and
Wormald (2001) also noted that whilst there was a great appreciation of benefits such
as improved appearance, weight loss and feeling good, there was little concern for
health problems such as heart disease, osteoporosis, or loss of mobility. A small
number of cross-sectional surveys, however, have identified positive links between
physical activity involvement and a perception of health and fitness benefits
associated with this involvement (McGuire, Neumark-Sztainer, & Story, 2002; Viira
& Raudsepp, 2000; Weinberg et al., 2000).

Some personal benefits of being active were also identified, again mostly by the more
active girls. Several of these girls spoke of the positive feelings arising from personal
achievement and improvement in their chosen activities, and many also discussed how participating in certain activities had led to an increase in their day to day confidence. Some of the girls also stated that they found physical activity to be relaxing after a hard day. Finally, the more active girls spoke of the social benefits of being active and how pursuing their chosen interests allowed them to mix with like minded individuals. Again this was not something that was identified by the less active girls.

3.3.2.4 Barriers to being active
Barriers to being active were clustered under two main headings, those defined as external barriers to physical activity, and those seen as more personal reasons. External barriers included schoolwork, part time jobs, and a perceived lack of time. Lack of time as a barrier to physical activity has been documented elsewhere (Neumark-Sztainer, Story, Hannan, et al., 2003; Saxena et al., 2002; Viira & Raudsepp, 2003), although how much this can be considered to be a genuine reason as opposed to an excuse is unclear. As Sleap and Wormald (2001) state: “The response ‘lack of time’ may be a polite disguise for ‘I really have other priorities’ – for example, people may prefer to use their free time watching an hour’s television rather than taking a cycle ride.”

Some of the girls spoke of enjoying physical activity in the summer but not in winter when it is cold and dark outside. Those girls who were involved in team based sporting activities also identified their own barriers in that there tended to be a lack of clubs and facilities available for them locally. Where these girls had managed to find places to train and play, many of them felt the other girls there to be hostile and unfriendly.

Several personal reasons for not being physically active were also discussed. As previously noted, many of the girls had other priorities and so felt their social lives to stand in the way of any intentions they might have to be active. Other reasons included not enjoying participation, a perception of not being good at physical activity, and simply feeling that “it’s not for me”: 
"I sometimes think I should do more but I don't really do anything because I don't like it ... I probably would, if I did enjoy it I would take up more things out of school but ... I just don't, I just don't like exercise ... It just doesn't really appeal to me, it's just never ... it's being bothered and I'm a pretty lazy person so ... I don't know, they'd have to force me quite a bit ... so ... I just don't like it because it's not me.”

By far the most common reason quoted, however, was that the girls simply could not be bothered. Some of the girls reported often being too tired to be physically active but for the most part it seemed that they were simply not motivated:

“I always wish I was better at things like that but I can never be bothered to start doing stuff.”

“I have done coz I always think “oh I’ll do this and I’ll get fit” and then I just don’t do it. I just can’t be bothered really.”

These feelings of a lack of motivation and not feeling like it were expressed as common barriers to physical activity by girls in a recent American study (Robbins, Pender, & Kazanis, 2003). Saxena et al. (2002) also found self-reported laziness to be a common reason for not exercising amongst American adolescent females not getting regular exercise.

A small handful of girls in this study did express intentions of becoming more physically active, and some stated that they felt they “ought to” be more active, but no real action was seen amongst any of the girls. Similarly, although some of the girls who felt they were not good at physical activity expressed a desire to become better, this desire did not appear to be strong enough to motivate them to take any action. Fox (1991) proposed that youngsters' decisions over whether or not to be active could essentially be reduced to two questions: Am I able? and Is it worth it? The question of Am I able? addresses perceived competence and self-efficacy, whilst the question of Is it worth it? assesses the benefits and costs of being physically active and includes cognitive and affective components such as enjoyment, beliefs, and attitudes (Welk, 1999). Individuals who enjoy physical activity but do not perceive themselves to be very good at it, or those who are high in perceived competence but do not value
physical activity are therefore less likely to be physically active than those who can answer yes to both of the above questions. For those girls who feel that neither are they particularly competent nor do they enjoy it, then physical activity is not going to be a very appealing choice and it is easy to see in these cases why barriers would be difficult to overcome.

3.4 Summary and conclusions

This was an exploratory study examining the place of physical activity in the lives of adolescent girls. Eight focus group interviews were conducted with a total of 47 girls aged 14 to 16 years. The data were analysed inductively to identify factors influencing girls' physical activity related decisions and how adolescent girls might be persuaded to become more physically active.

The study highlights that many of the problems identified by adolescent girls in relation to physical activity participation operate at a societal level. Many girls have rigid notions of femininity and are unwilling to look or act in such a way as to undermine their femininity. Their acceptance of the prescribed norms that seem to exist in today's society relating to the "thin ideal" or "body beautiful" means that they feel embarrassed putting themselves on show during sport or physical activity and do not like others to see them lest they do not measure up to the ideal body. Furthermore, their changing priorities upon entering their adolescent years mean that the sports and activities that once might have been considered to be fun and enjoyable are now abandoned in favour of pursuits deemed more suitable to those who are becoming young women. All of these factors can be seen to make up the culture in which youngsters live; they feed themselves through the popular media and the environment around us and have come to exist through the development of Western society as a whole over a great period of time. These problems are consolidated by the fact that by their own admission many girls are lazy and simply cannot be bothered to take part in physical activity of any kind. Promoting an active lifestyle to many adolescent girls is clearly going to be an uphill struggle.
On a more positive note, several of the factors identified by the participants in this study can be addressed. The role of supportive parents is clearly highlighted and indeed one pilot study in the USA encouraging daughters and mothers to exercise together has been found to effective in both home- and community based settings (Ransdell, Taylor, Oakland, et al., 2003). A competent teacher who creates an appropriate motivational climate is also demonstrated to be important and this finding has been corroborated by the research literature. Teacher training programmes and school-based interventions must therefore emphasise the importance of the motivational climate and encourage teachers to treat girls in a firm and fair manner. Teachers can also be responsible for addressing the problems relating to boys' treatment of girls during P.E. classes. To a certain extent it is likely that boys will always tease girls and given that this sort of behaviour no doubt takes place in many settings on a day to day basis as part of the process of growing up, it could be argued that there is very little teachers can do to change the situation. However, creating an environment of minimal tolerance could contribute to girls feeling more comfortable and therefore being more willing to participate. Finally, the strong consensus was that activity must be fun, informal in nature, and must involve participation with friends. Campaigns educating providers of sport and physical activity of the importance of this sort of set-up can help to create numerous opportunities for adolescent girls to participate in physical activity in an enjoyable and non-threatening environment.

Although the focus groups provided a great deal of rich data, the study was not without its limitations. As previously discussed, each girl was only interviewed on one occasion for one school period. Initially the school involved in the study was asked if each focus group could meet on two separate occasions and this would have allowed both the interviewer and the participants to reflect on key issues that then could have been examined in greater depth during the second meeting. Unfortunately, the school was reluctant to allow the girls out of classes on more than one occasion. Given the focus of the study on physical activity, however, and given that the girls were being removed from their P.E. classes to take part in the focus groups, it did not seem appropriate to press the point of having two meetings further.

The focus group situation was also clearly very threatening for some of the girls involved in the study. As much as possible I followed the guidelines previously
discussed to ensure that all participants were given an equal opportunity to voice their opinions; I tried to suppress overly loud group members and encourage those who were shy. For some girls, however, having to express an opinion that may be in conflict with that of their friends sometimes proved to be simply too much. One girl, for example, had a tendency to start to make a statement before becoming extremely bashful, giggling and then going quiet. Attempts to gently encourage this girl to present her point fully were generally then met with silly comments or statements such that she was only joking or "what would she know anyway?". This was frustrating as it seemed that she had some valid points to make but was just not brave enough to do so. For this sort of girl an interview with perhaps only one close friend present, whom she did not feel bashful or embarrassed in front of, may have been more appropriate.

Further problems could potentially exist when taking participants for each group from the same class. Although the intention was that by being surrounded by friends the girls would feel more comfortable to talk openly, it may equally have been the case that group dynamics led to the girls voicing a peer group opinion, as opposed to that which could truly be considered to be their own. Those with alternative viewpoints may have also been reluctant to voice them for fear of being mocked or teased by friends.

Finally, as previously mentioned, there was a tendency for the girls' responses to be biased towards school PE, and this bias should be considered when reviewing the findings of this study.

As with any qualitative research of this nature, it is acknowledged that the findings are specific to the participants in this study and cannot be extrapolated to the population as a whole. In as much as the girls in this study seemed typical of many girls in British society today, however, it is reasonable to expect that their collective opinions were generally representative of those of other adolescent girls in a similar situation. Comments and suggestions based on these findings can, therefore be reasonably expected to be both informative and useful.
Chapter 4

Study 3: A study of social-psychological and physical environmental factors in groups differing by levels of physical activity

4.1 Introduction

The findings of the review of the literature and the focus groups are in agreement in suggesting an important role in girls' sport and activity participation for positive psychology, personal importance, and a supportive social network. In addition, the literature review identified the lack of attention thus far directed towards physical environment variables, whilst the focus groups highlighted that, for some girls at least, self-presentational issues may be key in influencing their decisions over whether or not to be physically active. How do these social-psychological and environmental factors fit together in explaining adolescent girls' physical activity choices and behaviours and, given the bias in the literature towards North American data, how important are they to girls in the UK?

The aim of the present study was to attempt an understanding of such issues in the context of a sample of British girls. Survey methodology was identified as being appropriate to extend the findings from the focus groups using data from a larger group of adolescent girls.

Owing to wider study objectives not relevant to the present investigation, the study was carried out exclusively in Scotland. In recent years, policy concern with physical activity and health in Scotland has increased, with the establishment of the Physical Activity Task Force, the publication of its strategy for physical activity, Let's Make Scotland More Active (Scottish Executive, 2003b), and the appointment of a Physical
Activity Coordinator, all indicating the increased political priority of physical activity. Children and young people are identified as a key priority group and school-aged girls are particularly targeted. In addition, the Scottish Executive’s drive for health improvement (Scottish Executive, 2003a) states that physical activity and obesity are two of their five key risk factors for targeting, with ‘early years’ and ‘teenage transition’ two of their four areas of focus.

At school level, *Sport 21 2003-2007: The National Strategy for Sport* (SportScotland, 2003), aims to move towards all schoolchildren taking part in at least two hours of high quality physical education each week, with 85% of those aged 13-17 years taking part in sport, in addition to the school curriculum, more than once per week. Despite these initiatives, however, Scottish data (SportScotland, 2003) indicate that the proportion of girls taking part in all sports more than twice a week declines from 76 per cent in the 8-11 age group to 67 per cent in the 12-15 age group (10 per cent lower than boys). Moreover, data show that the health-related physical activity guideline of 60 minutes of physical activity of at least moderate intensity on most (five) days of the week is being met by 66% of girls at age 10-11, but only 35% at age 14-15 years (Shaw, McMunn, & Field, 2000). Research in Scotland is clear, therefore, in showing that girls are less active than boys and that physical activity declines through adolescence, meaning that it is vital to understand potential influencers of sport and physical activity participation among this population.

The present study was designed to fill the gaps that exist in knowledge about Scottish adolescent girls' sport and physical activity behaviour. The findings from the literature review and focus groups were used to inform the design of the social-psychological element of the survey. Since information on physical environmental factors as they relate to youngsters’ physical activity participation is sparse, the literature on the influence of these factors among adults was examined to provide some guidance as to what aspects might prove fruitful to measure: Humpel, Owen and Leslie (2002) conducted a review of the literature and concluded that although studies in this area in adults were also lacking, some patterns in the data were clear. A relationship between home equipment and physical activity was found in most of the studies identified. The authors also reported a study by the Centers for Disease Control and Prevention (1999) that found that people who perceived their
neighbourhood to be unsafe were more likely to be physically inactive. Studies assessing accessibility of facilities were found to generally report an association between this variable and physical activity. This finding has been corroborated by Sallis, Bauman and Pratt (1998), who found people living in neighbourhoods with a greater density of pay-for-use exercise facilities to be more likely to self-report exercise than those living in an area with fewer or no facilities, and the Healthy People 2000 survey (U.S. Department of Health and Human Services, 1998), which found that 51% of adults agreed that more available exercise facilities would help them to be more active.

In a recent paper, Duncan, Duncan, Strycker and Chaumeton (2004) state that research in adults has shown neighbourhoods rich in facilities to promote activity. These authors also surmise that amongst youngsters availability of resources, opportunity, convenience, and access to facilities and equipment all relate to physical activity. However, little research has been conducted on the links between physical environmental variables and physical activity in adolescent girls, and none have identified whether such links might vary by age. Based on this brief review of the literature it was decided that physical environmental questions should concentrate on use of home equipment, the nature of the girls' neighbourhoods, and availability and use of local facilities. Additionally, it was envisaged that factors associated with sport, exercise, and active transport participation would vary according to activity type. So that the results of the study could be as informative and relevant as possible, the decision was taken to examine these three distinct behaviours separately.

To assess factors affecting Scottish adolescent girls' sport, exercise, and active transport participation, the following questions were addressed:

- How much sport, exercise, and active transport do Scottish adolescent girls participate in?
- What percentage of participants reach recommended physical activity participation levels, does this figure decline with age, and how do these findings compare with other Scottish data?
- Which sports and activities are most prevalent amongst this population?
• What role do social psychological and physical environmental factors play in sport, exercise and active transport participation?

4.2 Method

4.2.1 Participants
Participants were recruited from 10 schools selected to be representative of the 391 state and 64 independent secondary schools in Scotland. Selection involved consideration of geographical location, private or state school status, multiple deprivation levels, denominational status, and ethnic minority status. In each school teachers were asked to select at random one class from each of secondary years one, three and four. Each child in the selected classes was asked to complete the survey. As a result of the selection criteria, a total of 366 girls completed the survey. The age range was 11-16 years (mean age = 13.25 +/- 1.32 years). 87.3% of the sample were classified as White European.

4.2.2 Measures
Pupils were asked to complete a survey during a normal school class period. The survey consisted of two parts, the first measuring participation in sports, exercise and active transport, and the second examining potential social psychological and physical environmental influences on sport and physical activity participation.

4.2.2.1 Section 1: Participation in sport, exercise and active transport
Data on sport and physical activity participation were collected using a modified form of the Self-Administered Physical Activity Checklist (SAPAC) (Sallis, Strikmiller, Harsha, & Feldman, 1996). The original SAPAC involved the recall of physical activities and sedentary behaviours over the previous day. The physical activity items from the original SAPAC have been shown to have acceptable levels of test-retest reliability and validity related to heart rate telemetry and accelerometer measures among American fifth grade girls and boys (Sallis et al., 1996).

In its modified form young people were asked to recall activity over the past four weeks to reduce the likelihood of capturing sporadic behaviours while still retaining a
reasonable chance of accurate recall. The present study also concentrated solely on
sport, exercise, and active transport, omitting measures of sedentary behaviour.
Activities were modified to be appropriate for youngsters living in Scotland. The
modified SAPAC contained a list of 37 sports, seven exercise behaviours, and two
active transport behaviours. Participants were asked to indicate which of the activities
they had participated in during the past four weeks, the number of days they had
participated in each activity, and the average number of minutes of participation on
each occasion. Open-ended items were also used to capture any activities not
included in the original list.

Based on responses to this part of the survey participants’ total time spent in each
individual activity during the past four weeks was calculated. For ease of
interpretation and comparison with previous studies, the time spent in each physical
activity was then divided by four to indicate the average minutes per week. Overall
time each week spent in each of sports, exercise, and active transport was then
calculated.

4.2.2.2 Section 2: Influences on sport and physical activity participation
Participants were asked to answer questions assessing various potential correlates of
and barriers to sport and physical activity participation (see Appendix G for the full
survey). Items for this section were established based on the outcomes of the review
of the literature and the focus groups. Some items were drawn from previously
validated questionnaires including the Children’s Physical Self Perception Profile (C-
PSPP) (Whitehead, 1995), the Social Physique Anxiety Scale (SPA) (Hart, Leary, &
Rejeski, 1989), and the Self-Efficacy Scale of a questionnaire designed by Saunders et
al. (1997) to measure psychosocial influences on children’s physical activity. In
addition items were derived from the work of Sallis, Johnson, Calfas, et al. (1997) and
Marcus et al. (1992; 2003). Owing to the project sponsor’s tight timescale, it was not
possible to pilot the questionnaire before distribution. The final version, however,
was subjected to detailed discussion and brainstorming sessions to be sure the
sponsors were satisfied with the items to be included, and the use of the previously
mentioned validated items where possible.
In its final version this part of the questionnaire comprised 27 Likert-type questions designed to assess a variety of potential social psychological predictors of sport and physical activity participation, including self-presentational issues, the influence of friends, parental influences, enjoyment of sport and activity, perceived ability, personal importance of being physically active, and the school environment. In addition, participants were asked to indicate how supportive parents, friends, siblings, teachers, and coaches were of their participation in sport and physical activity.

Physical environment factors were measured using items drawn from Sallis et al. (1997). These items assessed: availability of home equipment; the nature of the surrounding area, such as busy roads or enjoyable scenery; and availability of facilities within a reasonable distance of the home. Participants were given overall composite scores for each of these constructs, relative to either sports, exercise or active transport participation, as follows: The home equipment question asked participants to indicate availability of five pieces of home equipment. A score of one was given to a piece of equipment available and a zero was allocated to equipment not available. An overall score for this question was then calculated. Relevance of each item to sport, exercise and active transport participation was judged so that for sport the question comprised four items (sports equipment, skateboard, bike, garden), resulting in a score range of zero to four, for exercise the question comprised three items (bike, workout videos, garden), resulting in a score range of zero to three, and for active transport the question comprised one item (bike), resulting in a score range of zero to one.

The question assessing the nature of the surrounding area contained both positive and negative items. A score of one was allocated to positive items and, minus one was scored to negative items. As with home equipment composite scores were made up based on the inclusion of items specific to each activity type. For sport the items included were busy roads, street lighting, safe area, see girls being physically active in the neighbourhood, see girls doing nothing in the neighbourhood, and intimidating area, giving an overall score range of −3 to +3. For exercise, the items included were busy roads, street lighting, safe area, availability of cycle paths, pleasant scenery, see girls locally being physically active, see girls locally doing nothing, and intimidating area, giving an overall score range of −3 to +5. For active transport items included
were busy roads, street lighting, safe area, cycle paths, pleasant scenery, intimidating area, giving an overall score range of -2 to +4. For the purposes of analysis all scores were shifted to give a lowest overall score of 0.

The question assessing availability of facilities nearby comprised of ten items; again one point was allocated to each item indicated to be available and again items were chosen specific to each activity type. For sport the items included were dance studio, sports courts, playing fields, park, leisure centre, running track, skateboarding area, swimming pool, hiking trails, giving an overall score range of 0 to 9. For exercise the items included were dance studio, gym, playing fields, park, leisure centre, running track, swimming pool, and hiking trails, giving an overall score range of 0 to 8. No items were deemed to relate to active transport and so this question was not included in the active transport analysis.

4.2.3 Procedure

Surveys were administered in each school by a trained research assistant with a teacher present at all times. All surveys were distributed, completed and collected during a single class period. Pupils were informed that participation was voluntary and anonymous, and that they were free to withdraw at any time. Informed consent was indicated by a completed returned survey. Participants were also told to leave any question blank that they were not comfortable with answering. The research assistant was on hand throughout to help with any problems the participants may have had. Ethical approval was obtained from the university prior to commencement of the study.

To ensure that all participants understood our definition of sport and physical activity, the two terms were described at the start of the survey as follows:

"Sport: When we say 'sport' we mean those listed below and any others that you would think of as sports, plus any training for taking part in them. We include sports that involve competition (including training for competitions) and have rules, such as football, netball, athletics, and golf and we also include dancing and snooker/billiards/pool. We do NOT include chess and similar 'inactive' games."
"Physical activity: When we say 'physical activity' we mean all other types of physical activities that require effort, such as walking, stair climbing, playing in the street for fun and enjoyment rather than for competition or training. This includes cycling to school and walking the dog. It does NOT include playing on the computer or other activities with very small movement."

4.2.4 Data screening

The data were screened prior to analysis. Initially this involved a visual inspection of the data to ensure that entry had been as accurate as possible. Participants who had failed to provide any physical activity data or who had not completed any of the second part of the questionnaire were removed from the dataset. Next, data were checked using the SPSS 'Frequencies' command. Excessively high physical activity scores were checked for errors against the original questionnaires and amended where necessary. Following the recommendations of Tabachnick and Fidell (1996), participants who had reported exceedingly high physical activity scores were considered to be sampled from the intended population to be studied and so were retained in the dataset.

To reduce the influence of outliers, the 95th percentiles for minutes in sport, exercise, and active transport were calculated and values in excess of this amount were reduced accordingly. The distributions for each activity type were then checked. Each activity type was found to be positively skewed and transformation procedures could not reduce this non-normality to within acceptable limits.

With reference to answers to Part B of the questionnaire, again errors were checked against the original and recoded where necessary. Where missing data were encountered, it was recoded to be in line with the mean score for that particular question (Tabachnick & Fidell, 1996). The two single items assessing mother's and father's participation were to be used in the analysis and so the distribution of these two items was checked. Mother's participation scores were positively skewed. The item was log-transformed to return it to normality following the recommendations of Tabachnick and Fidell (1996). Following these data screening procedures, the final sample size for analysis was 352 girls.
4.2.5 Data analysis

The data were subjected to several types of analyses. Firstly, descriptive analyses were conducted to identify age and ethnicity of the sample, and to identify the sports and physical activities most prevalent among this group of adolescents. Next, to enable comparison of the SAPAC with other measures of physical activity in the Scottish population, the percentage of girls reaching physical activity recommendations in age groups 11, 12-13, and 14-15 was compared with other Scottish data (Shaw et al., 2000). Exploratory factor analysis was then carried out on the social psychological items of the questionnaire to identify their underlying structure.

Analysis of the social-psychological and physical environmental factors was carried out separately for each of sport, exercise, and active transport. The mean minutes per week in each type of activity were calculated, along with the percentage of girls taking part in no activity at all over the previous four weeks. Bivariate correlations examined the relationship between each activity type and the social-psychological and physical environmental variables. Finally, regression analysis examined which of the social-psychological and physical environmental variables were predictive of participation in each of sport, exercise and active transport. As discussed in section 4.2.2, the physical environmental variables were tailored to be specific to each activity type. Age was controlled for by using the "forward" command in SPSS and entering age alone into the first layer.

4.3 Results

4.3.1 Descriptive statistics

The final sample for analysis comprised 352 girls. The age range was 11-16 years ($M=13.25$, $SD=1.32$). 174 of the girls were aged 11-13 and 178 were aged 14-16. Ethnicity of the girls was 87.3% white, 11.5% Asian, and 1.2% other.

By far the most popular activity among these girls was walking for transport, with 71% of girls reporting that they had walked on average 3.1 times per week over the last four weeks for an average of 25 minutes each time. Summary details of the top
ten activities are presented in Table 4.1. It is interesting to note that although a reasonable percentage of girls indicate taking part in each of the activities, average number of sessions and minutes in each session is low.

Table 4.1: Participation statistics for the ten most popular sports and physical activities

<table>
<thead>
<tr>
<th>Sport/activity</th>
<th>% of girls participating in last four weeks</th>
<th>Average number of times participated in per week</th>
<th>Average minutes per session</th>
</tr>
</thead>
<tbody>
<tr>
<td>Walking for transport</td>
<td>71</td>
<td>3.1</td>
<td>25</td>
</tr>
<tr>
<td>Running/jogging</td>
<td>48</td>
<td>0.7</td>
<td>17</td>
</tr>
<tr>
<td>Swimming</td>
<td>47</td>
<td>0.4</td>
<td>42</td>
</tr>
<tr>
<td>Dancing</td>
<td>38</td>
<td>0.5</td>
<td>26</td>
</tr>
<tr>
<td>Football</td>
<td>34</td>
<td>0.6</td>
<td>18</td>
</tr>
<tr>
<td>Walking for exercise</td>
<td>29</td>
<td>0.5</td>
<td>19</td>
</tr>
<tr>
<td>Cycling for exercise</td>
<td>29</td>
<td>0.3</td>
<td>16</td>
</tr>
<tr>
<td>Swimming for exercise</td>
<td>25</td>
<td>0.2</td>
<td>21</td>
</tr>
<tr>
<td>Badminton</td>
<td>24</td>
<td>0.2</td>
<td>12</td>
</tr>
<tr>
<td>Skateboarding/roller/inline skating</td>
<td>21</td>
<td>0.2</td>
<td>9</td>
</tr>
</tbody>
</table>

4.3.2 Comparison of data from the SAPAC with other Scottish data

The 1998 Scottish Health Survey (Shaw et al., 2000) found that among girls aged 10-11 66% reached the recommended activity level of one hour of physical activity of at least moderate intensity on most (five) days of the week; the corresponding figures for ages 12-13 and 14-15 were 49% and 35% respectively. Among this sample 63.3% of 11 year olds, 51.5% of 12-13 year olds, and 53.4% of 14-15 year olds reached the recommended activity level. The similarities between figures for age groups 10-11 and 12-13 offers good support for the validity of the SAPAC in a four week recall format. However the discrepancy between activity levels of 14-15 year old girls in our sample in the 1998 Scottish Health Survey indicates cause for caution in interpreting the results from the present study.

4.3.3 Factor analysis of the social-psychological variables

Principal axis factoring using varimax rotation was carried out to identify social psychological factors to be used in the final analysis. Initially all of the Likert scale items, plus the items relating to significant others' support, were entered into the analysis. Nine factors emerged having eigenvalues greater than 1; these nine factors
explained 60.0% of the variance. Inspection of the scree plot and the rotated factor matrix, however, revealed that only the first four factors, which explained 40.6% of the variance, were meaningful and should be retained. To minimise overlap between factors, cross-loading items were dropped, as were items with loadings lower than .40. Of the 31 items initially included in the factor analysis, 18 were retained. The factor loadings of these items are displayed in Table 4.2.

Table 4.2: Exploratory factor analysis (varimax rotation). Factor loadings above .40 are indicated in bold.

<table>
<thead>
<tr>
<th>Item</th>
<th>F1</th>
<th>F2</th>
<th>F3</th>
<th>F4</th>
</tr>
</thead>
<tbody>
<tr>
<td>I worry what I look like when playing sport or doing physical</td>
<td>.77</td>
<td>.00</td>
<td>.00</td>
<td>.00</td>
</tr>
<tr>
<td>activity in front of others</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I feel uneasy playing sport or doing physical activity in front of</td>
<td>.74</td>
<td>.00</td>
<td>.00</td>
<td>.12</td>
</tr>
<tr>
<td>other people</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I feel uneasy playing sport I'm not good at in front of other</td>
<td>.71</td>
<td>.00</td>
<td>.00</td>
<td>.00</td>
</tr>
<tr>
<td>people</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I don’t like other people to see how I look after I have been</td>
<td>.65</td>
<td>.00</td>
<td>.00</td>
<td>.11</td>
</tr>
<tr>
<td>playing sport or doing physical activity</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I don’t feel that I’m very good at sport</td>
<td>.59</td>
<td>-.21</td>
<td>.00</td>
<td>.27</td>
</tr>
<tr>
<td>I wouldn’t continue to do sport or physical activity if it didn’t</td>
<td>.43</td>
<td>.00</td>
<td>.00</td>
<td>.00</td>
</tr>
<tr>
<td>help me manage my weight</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Enjoyment is one of the main reasons why I do sport or</td>
<td>-.16</td>
<td>.64</td>
<td>.00</td>
<td>-.27</td>
</tr>
<tr>
<td>physical activity</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sport is important for girls in this school</td>
<td>.00</td>
<td>.59</td>
<td>.13</td>
<td>.00</td>
</tr>
<tr>
<td>I am still physically active even when my friends want me to</td>
<td>-.12</td>
<td>.49</td>
<td>.00</td>
<td>-.23</td>
</tr>
<tr>
<td>something else</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Girls’ sport is as important as boys’ sport in this school</td>
<td>.00</td>
<td>.45</td>
<td>.13</td>
<td>.00</td>
</tr>
<tr>
<td>My PE teacher is supportive</td>
<td>-.11</td>
<td>.43</td>
<td>.33</td>
<td>.12</td>
</tr>
<tr>
<td>I am still physically active even if my friends don’t want me to</td>
<td>-.15</td>
<td>.41</td>
<td>.00</td>
<td>-.27</td>
</tr>
<tr>
<td>be</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>My father is supportive</td>
<td>.00</td>
<td>.22</td>
<td>.74</td>
<td>.00</td>
</tr>
<tr>
<td>My mother is supportive</td>
<td>.00</td>
<td>.11</td>
<td>.73</td>
<td>-.28</td>
</tr>
<tr>
<td>My friends are supportive</td>
<td>-.16</td>
<td>.37</td>
<td>.47</td>
<td>.00</td>
</tr>
<tr>
<td>I don’t find sport and physical activity enjoyable</td>
<td>.35</td>
<td>-.33</td>
<td>-.15</td>
<td>.54</td>
</tr>
<tr>
<td>Keeping fit and healthy is not that important to me</td>
<td>.00</td>
<td>.00</td>
<td>.00</td>
<td>.51</td>
</tr>
<tr>
<td>It makes no difference to how I feel about myself if I’m active</td>
<td>.14</td>
<td>-.12</td>
<td>.00</td>
<td>.45</td>
</tr>
<tr>
<td>or not</td>
<td></td>
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</tr>
</tbody>
</table>

The four factors were labelled “Self-presentation”, “Positive Importance”, “Social Support”, and “Lack of Importance”. The internal consistency of each factor was assessed using Cronbach’s alpha coefficient, which was found to be .83 for Self-presentation, .70 for Positive Importance, .71 for Social Support, and .58 for Lack of Importance.
Scores on the Positive Importance and Social Support variables were negatively skewed, while Lack of Importance scores were positively skewed. Procedures outlined by Tabachnick and Fidell (1996) were followed to return the distribution for each variable to within acceptable limits. Accordingly, Positive Importance scores were reflected and square-rooted, Social Support scores were reflected and log-transformed, and Lack of Importance scores were square-rooted. Variables are reflected by finding the largest score and adding one to it to create a new constant that is larger than any score in the distribution. A new variable is then created by subtracting each score from the constant. A variable with negative skewness is therefore converted to one with positive skewness prior to transformation (Tabachnick & Fidell, 1996).

4.3.4 Analysis of sport

The mean amount of time spent in sport was 236.32 minutes per week (SD=279.08, SE=14.88). 18.5% of the participants reported taking part in no sport at all over the previous four weeks.

Although the only variables not to correlate significantly with sport participation were mother’s participation, self-presentation, and aspects of the surrounding area, correlations between the remaining variables and sport participation were generally low. Table 4.3 shows the correlations among the variables.

Multiple regression analysis was carried out with age entered first to control for this variable, and the social-psychological and physical environmental variables all entered together in the second block. Results indicated that age was not a significant predictor of sport participation (β=-0.03, p=0.51). The only significant predictors were positive importance (β=0.26, p=0.000), facilities available at home (β=0.20, p=0.000), and father’s participation (β=0.15, p=0.004). All three of these variables had a positive relationship with sport participation and between them accounted for 13.1% of the variance (F(3,348)=17.44, p=0.000). The full results for this analysis are shown in Table 4.4.
Table 4.3: Correlations among variables for sport participation

<table>
<thead>
<tr>
<th></th>
<th>1</th>
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<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Sport (mins)</td>
<td>1.00</td>
<td>.18**</td>
<td>.10</td>
<td>.20**</td>
<td>.26**</td>
<td>-.20**</td>
<td>-.10</td>
<td>.24**</td>
<td>.04</td>
<td>.11*</td>
</tr>
<tr>
<td>2. Father’s participation</td>
<td>1.00</td>
<td>.33**</td>
<td>.22**</td>
<td>.10</td>
<td>-.07</td>
<td>-.05</td>
<td>.08</td>
<td>.03</td>
<td>.02</td>
<td></td>
</tr>
<tr>
<td>3. Mother’s participation</td>
<td>1.00</td>
<td>.13*</td>
<td>.09</td>
<td>-.17**</td>
<td>-.06</td>
<td>.06</td>
<td>.03</td>
<td>-0.2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Social support</td>
<td>1.00</td>
<td>.36**</td>
<td>-.26**</td>
<td>-.21**</td>
<td>.18**</td>
<td>-.02</td>
<td>.14**</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Positive importance</td>
<td>1.00</td>
<td>-.32**</td>
<td>-.25**</td>
<td>.13*</td>
<td>.14**</td>
<td>.17**</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Lack of importance</td>
<td>1.00</td>
<td>.34**</td>
<td>-.24**</td>
<td>-.03</td>
<td>.01</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Self-presentation</td>
<td>1.00</td>
<td>-.11*</td>
<td>-.02</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. Home equipment</td>
<td>1.00</td>
<td>-.04</td>
<td>.12*</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. Surrounding area</td>
<td>1.00</td>
<td></td>
<td>.03</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10. Local facilities</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* p<0.05; ** p<0.01
Table 4.4: Regression analysis of predictors of sport participation

<table>
<thead>
<tr>
<th>Predictor</th>
<th>$\beta$</th>
<th>$t$</th>
<th>$p$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>-0.03</td>
<td>-0.66</td>
<td>0.51</td>
</tr>
<tr>
<td>Father participates regularly</td>
<td>0.15</td>
<td>3.08</td>
<td>0.004</td>
</tr>
<tr>
<td>Mother participates regularly</td>
<td>0.03</td>
<td>0.50</td>
<td>0.62</td>
</tr>
<tr>
<td>Social support</td>
<td>0.06</td>
<td>1.17</td>
<td>0.24</td>
</tr>
<tr>
<td>Positive importance</td>
<td>0.26</td>
<td>5.08</td>
<td>0.00</td>
</tr>
<tr>
<td>Lack of importance</td>
<td>-0.08</td>
<td>-1.48</td>
<td>0.14</td>
</tr>
<tr>
<td>Self-presentation</td>
<td>-0.02</td>
<td>-0.39</td>
<td>0.70</td>
</tr>
<tr>
<td>Home equipment</td>
<td>0.20</td>
<td>4.01</td>
<td>0.00</td>
</tr>
<tr>
<td>Aspects of the surrounding area</td>
<td>0.02</td>
<td>0.31</td>
<td>0.76</td>
</tr>
<tr>
<td>Availability of local facilities</td>
<td>0.04</td>
<td>0.82</td>
<td>0.41</td>
</tr>
</tbody>
</table>

4.3.5 Analysis of exercise

The mean amount of time spent in exercise was 77.16 minutes per week (SD 113.61, SE 6.06). 32.9% of girls reported taking part in no exercise at all over the previous four weeks.

As with sport, correlations between the social-psychological and physical environmental variables and time spent in exercise were generally significant but low. Only self-presentation and the surrounding area did not correlate significantly with exercise participation. Correlations are shown in Table 4.5.

Results from the multiple regression analysis indicated that only social support ($\beta=0.19$, $p=0.000$), facilities available in the neighbourhood ($\beta=0.15$, $p=0.005$), and father’s participation ($\beta=0.12$, $p=0.024$) significantly predicted exercise participation. These three variables had a positive relationship with exercise participation and between them accounted for 7.3% of the variance ($F(3,348)=9.08$, $p=0.000$). As with sport participation, age was not a significant predictor of participation in exercise / physical activity ($\beta=-0.05$, $p=0.35$). Full results are shown in Table 4.6.

4.3.6 Analysis of active transport

The mean amount of time spent in active transport was 27.9 minutes per week (SD 35.65, SE 2.15). 27.9% of girls reported taking part in no active transport at all over the previous four weeks.
Table 4.5: Correlations among variables for exercise participation

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
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<th>5</th>
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<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Exercise (mins)</td>
<td>1.00</td>
<td>.15**</td>
<td>.13*</td>
<td>.19**</td>
<td>.15**</td>
<td>-.13*</td>
<td>-.08</td>
<td>.12*</td>
<td>-.01</td>
<td>.17**</td>
</tr>
<tr>
<td>2. Father's participation</td>
<td>1.00</td>
<td>.33**</td>
<td>.22**</td>
<td>.10</td>
<td>-.07</td>
<td>-.05</td>
<td>.06</td>
<td>.05</td>
<td>.01</td>
<td></td>
</tr>
<tr>
<td>3. Mother's participation</td>
<td>1.00</td>
<td>.13*</td>
<td>.09</td>
<td>-.17**</td>
<td>-.06</td>
<td>.06</td>
<td>.04</td>
<td>-.02</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Social support</td>
<td>1.00</td>
<td>.36**</td>
<td>-.26**</td>
<td>-.21**</td>
<td>.15**</td>
<td>.01</td>
<td>.15**</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Positive importance</td>
<td>1.00</td>
<td>-.32**</td>
<td>-.25**</td>
<td>.11*</td>
<td>.14**</td>
<td>.19**</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Lack of importance</td>
<td>1.00</td>
<td>.34**</td>
<td>-.20**</td>
<td>-.03</td>
<td>.01</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Self-presentation</td>
<td>1.00</td>
<td></td>
<td></td>
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<td></td>
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<td></td>
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<td></td>
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<tr>
<td>8. Home equipment</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. Surrounding area</td>
<td>1.00</td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10. Local facilities</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*p<0.05; **p<0.01
Table 4.6: Regression analysis of predictors of exercise participation

<table>
<thead>
<tr>
<th>Predictor</th>
<th>$\beta$</th>
<th>$t$</th>
<th>$p$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>-0.05</td>
<td>-0.93</td>
<td>0.35</td>
</tr>
<tr>
<td>Father participates regularly</td>
<td>0.12</td>
<td>2.27</td>
<td>0.02</td>
</tr>
<tr>
<td>Mother participates regularly</td>
<td>0.08</td>
<td>1.46</td>
<td>0.15</td>
</tr>
<tr>
<td>Social support</td>
<td>0.19</td>
<td>3.68</td>
<td>0.00</td>
</tr>
<tr>
<td>Positive importance</td>
<td>0.06</td>
<td>1.13</td>
<td>0.26</td>
</tr>
<tr>
<td>Lack of importance</td>
<td>-0.09</td>
<td>-1.73</td>
<td>0.09</td>
</tr>
<tr>
<td>Self-presentation</td>
<td>-0.05</td>
<td>-0.92</td>
<td>0.36</td>
</tr>
<tr>
<td>Home equipment</td>
<td>0.07</td>
<td>1.39</td>
<td>0.17</td>
</tr>
<tr>
<td>Aspects of the surrounding area</td>
<td>-0.04</td>
<td>-0.67</td>
<td>0.50</td>
</tr>
<tr>
<td>Availability of local facilities</td>
<td>0.15</td>
<td>2.83</td>
<td>0.01</td>
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</table>

None of the social-psychological or physical environmental variables correlated significantly with active transport participation. These correlations are displayed in Table 4.7.

Results from the regression analysis indicated that although the social-psychological and physical environmental variables accounted between them for 3.4% of the variance ($F(9,342)=3.09, p=0.001$), none of the variables alone significantly predicted participation in active transport. Age, however, was a significant predictor of active transport ($\beta=0.20, p=0.000$), having a positive relationship with active transport and accounting for 4.1% of the variance ($F(1,350)=14.76, p=0.000$). Full results from the regression analysis are shown in Table 4.8.

4.4 Discussion

This survey found that walking for transport was by far the most common activity, with 71% of girls reporting that they had walked on average 3.1 times per week over the last four weeks for an average of 25 minutes each time. This finding is encouraging. Walking is likely to be a popular activity with adolescent girls because it is an activity that can be carried out with friends and that requires no specialist equipment, and this is reflected in the fact that walking for exercise was also popular amongst both age groups of youngsters. However, the intensity of such walks is unknown and may not meet the 'moderate' intensity guidelines. The over-reporting of activity typical of these kinds of surveys must also be taken into account.
<table>
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<th>7</th>
<th>8</th>
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</tr>
</thead>
<tbody>
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<td>1. Active transport (mins)</td>
<td>1.00</td>
<td>.00</td>
<td>-10</td>
<td>-.08</td>
<td>.04</td>
<td>.07</td>
<td>-.06</td>
<td>-.02</td>
<td>-.04</td>
</tr>
<tr>
<td>2. Father’s participation</td>
<td>1.00</td>
<td>.33**</td>
<td>.22**</td>
<td>.10</td>
<td>-.07</td>
<td>-.05</td>
<td>.06</td>
<td>.05</td>
<td></td>
</tr>
<tr>
<td>3. Mother’s participation</td>
<td>1.00</td>
<td>.13*</td>
<td>.09</td>
<td>-.17**</td>
<td>-.06</td>
<td>.07</td>
<td></td>
<td>.02</td>
<td></td>
</tr>
<tr>
<td>4. Social support</td>
<td></td>
<td>1.00</td>
<td>.36**</td>
<td>-.26**</td>
<td>-.21**</td>
<td>.15**</td>
<td>-.01</td>
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<td></td>
</tr>
<tr>
<td>5. Positive importance</td>
<td></td>
<td></td>
<td>1.00</td>
<td>-.32**</td>
<td>-.25**</td>
<td>.12*</td>
<td>.10</td>
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<tr>
<td>6. Lack of importance</td>
<td></td>
<td></td>
<td></td>
<td>1.00</td>
<td>.34**</td>
<td>-.19**</td>
<td>-.01</td>
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<td></td>
</tr>
<tr>
<td>7. Self-presentation</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1.00</td>
<td>-.04</td>
<td>.05</td>
<td></td>
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<td>8. Home equipment</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>1.00</td>
<td>.02</td>
<td></td>
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<tr>
<td>9. Surrounding area</td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td>1.00</td>
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</tbody>
</table>

*p<0.05; **p<0.01
Table 4.8: Regression analysis of predictors of active transport

<table>
<thead>
<tr>
<th>Predictor</th>
<th>$\beta$</th>
<th>$t$</th>
<th>$p$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>0.20</td>
<td>3.85</td>
<td>0.00</td>
</tr>
<tr>
<td>Father participates regularly</td>
<td>0.25</td>
<td>0.48</td>
<td>0.63</td>
</tr>
<tr>
<td>Mother participates regularly</td>
<td>-0.08</td>
<td>-1.56</td>
<td>0.12</td>
</tr>
<tr>
<td>Social support</td>
<td>0.09</td>
<td>1.70</td>
<td>0.09</td>
</tr>
<tr>
<td>Positive importance</td>
<td>0.07</td>
<td>1.26</td>
<td>0.21</td>
</tr>
<tr>
<td>Lack of importance</td>
<td>0.04</td>
<td>0.79</td>
<td>0.43</td>
</tr>
<tr>
<td>Self-presentation</td>
<td>-0.08</td>
<td>-1.57</td>
<td>0.12</td>
</tr>
<tr>
<td>Home equipment</td>
<td>0.01</td>
<td>0.14</td>
<td>0.89</td>
</tr>
<tr>
<td>Aspects of the surrounding area</td>
<td>-0.07</td>
<td>-1.25</td>
<td>0.21</td>
</tr>
</tbody>
</table>

The finding that running/jogging, swimming, and badminton were also prevalent is similar to SportScotland’s finding that between 1999 and 2001 the most popular sports for girls aged 12 to 15 years were Basketball/netball/volleyball (51%), Swimming (47%), Running/jogging (42%) and Badminton (39%) (SportScotland, 2003). Basketball, netball, and volleyball were measured individually in this survey and so a direct comparison between the two studies was not possible. The consistent finding of the prevalence of swimming, running/jogging, and badminton, however, gives an indication of the types of activity that might be used to encourage girls to be more active. A large proportion of the most popular activities were also those that are predominantly carried out as recreational or fitness type activities, football and badminton being the only two to have a more structured format. This indicates a preference amongst these girls for unstructured activities, a finding which mirrors that of the previous focus groups. Some suggestions then for ways to make activities more accessible to adolescent girls include provision of safe areas for girls to run and jog in, girls only swimming and badminton sessions, and reduced rates at these facilities.

Although many sports and activities were reported to have been participated in, overall the mean times per week and minutes per session was very low for many of the activities. Furthermore, a large numbers of girls reported taking part in none of each of sport, exercise and active transport over the previous four weeks. Whilst almost one third of the girls reported doing no exercise, the figure for both sport and active transport was approximately one fifth of girls. Overall, 9.1% of girls reported doing no activity of any kind over the previous four weeks. Whilst some might argue that a figure of less than ten percent being completely inactive is not too great a cause...
for concern, the generally low level of participation in most of the activities, in terms of both time and frequency, really is cause for concern. Providers and policy makers cannot afford to take any pressure of themselves if the goal of 80% of all children aged 16 and under meeting the minimum recommended levels of activity by 2022 is to be reached (Scottish Executive, 2003b).

Three factors were found to be predictive of sport participation: positive importance, availability of home facilities, and father's participation. It is perhaps unsurprising that a greater importance attached to being physically active results in greater participation in sport; however, the findings relating to home equipment and father's participation perhaps tell us a little about how a supportive home environment in terms of both equipment available and other family members' participation levels can contribute to adolescent girls' own participation. This proposition is supported by Kohl and Hobbs (1998), who argue that parental influence on children's physical activity is most likely to occur through an interaction of modelling and of providing an environment supportive of physical activity participation. A more refined measure might have examined whether the father was participating with his daughter or whether some perception of positive role modeling was contributing to the daughter's increased sport participation. The take home message from the results of this study, however, is to make equipment available for adolescent girls to use at their will, and to target family units, especially including the father, as opposed to the adolescent girl isolation. It would seem that in the case of sport at least, improved participation really could start in the home. Given the importance of an active lifestyle for everybody, targeting the whole family could only be seen as beneficial for all concerned.

Concerning exercise, the three factors found to be predictive of participation were social support, neighbourhood facilities, and father's participation. The role of the father is again emphasised and the point reiterated that future attempts should address exactly how the father's participation relates to his daughter's. In terms of social support, it is interesting to note here how the findings for exercise differ to those for sport. It might be argued that whilst sport is something done out of intrinsic interest and for pure enjoyment's sake, exercise can often be done out of sense of wanting to keep fit, sometimes resulting, therefore, in a greater feeling of duty and a lesser
feeling of intrinsic enjoyment. That importance attached to being physically active was predictive of sport but not exercise participation might be indicative of the fact that for many girls, it is important to keep fit and in shape and exercise is simply what they do to achieve this. It may that it is not that important to be physically active per se, but rather to keep in good shape, and this analysis did not pick up that subtle difference.

Following on from this, a logical assumption might be that if an adolescent girl is choosing to participate in exercise out of fitness concerns and is not as intrinsically motivated as she might be for other sports, then social support could be very important to her continued participation. If a group of girls arranges to attend an aerobics class together, for instance, the camaraderie might well make the occasion much more enjoyable than if one girl were to go to the class alone. This might then increase the chance of adherence to an exercise programme long term. Furthermore, if the adolescent girl’s peer group all have a positive attitude towards exercise and encourage each other to participate, the individual is likely to find this much more conducive to her participation than if her friends all voice a strong dislike for exercise and pressure her to do other things in her spare time. This suggestion is borne out by findings from the previous focus group study. In this regard then, it would seem logical to argue that attempts to increase adolescent girls’ exercise participation should target groups of friends. For those girls whose friends are not interested in exercise, a promise of meeting like minded individuals and making new friends through the exercise itself might prove to be attractive.

That availability of neighbourhood facilities was predictive of exercise participation would hardly seem to be surprising but it does emphasise the point that local providers should do their best to cater for adolescent girls. It is often the case that youngsters are not permitted to use certain local facilities; for example youngsters in Davis and Jones’ (1996) study spoke of not being allowed into gyms or aerobics classes until they were older. Whilst safety issues might be behind certain prohibitions, however, supervised gym sessions and teenage aerobics classes might well prove to be very popular and risk free so long as outlined procedures were followed.
Despite walking for transport being the most prevalent activity, participation in active transport overall was low, with the average girl spending less than half an hour per week in active transport. This finding might not be considered surprising, however: in the UK the amount of children walking to school dropped almost 20% between 1970 and 1991 (Hillman, 1993), and Sleap and Warburton (1993) found that 50% of British children aged 4-11 years were driven less than a mile to school on a regular basis.

Despite this low figure, however, it was surprising that not one variable was predictive of participation in active transport, and it might especially have been hypothesized that aspects of the environment would relate to active transport participation. Two issues are raised here. Firstly, the ten schools selected to take part in this study were chosen to be representative of all areas of Scotland. This means that whilst some participants would have lived in densely populated cities, others might have lived in a scarcely populated small village. The environmental constraints on active transportation are likely to be very different between the two types of area. For instance, whilst girls in a city might encounter busy roads or unsafe areas, those in the countryside might indicate a lack of street lamps to be their main priority. It may be the case that answers to questions about the environment across the different areas effectively cancelled each other out so that little overall variance could be detected. A further consideration in this regard lies in the fact that in the smaller villages many girls may live so close to their school or friends that it is simply not possible to accumulate a great deal of time in active transport, whilst others may live in the next village to their school or friends, so being unable to participate in active transport at all. A future suggestion then is to measure aspects of the physical environment separately for differing types of location, and to develop specific measures accordingly. It is unlikely that aspects of the environment that facilitate or hamper active transport in Glasgow city center will be the same as those influencing active transport in St John’s Town of Dalry, with a total population of approximately 200 and the nearest town roughly 40 miles away.

A second consideration is that age was positively associated with active transport, suggesting that as girls got older, they were more likely to walk or cycle for transport purposes. This may be owing to the fact that older girls are more likely to be allowed
by their parents to travel unsupervised. This suggestion is again borne out by the findings of Jago and Baranowski (2004), who found the effectiveness of active travel to school to be impaired by parental concerns for child safety, and Davis and Jones (1996), where youngsters complained of not being allowed to cycle to school, and where parental concerns were reported to shape girls’ behaviour much more than boys’. This issue is likely to be applicable to other activities where unsupervised time outdoors is a consideration. For instance, Coakley and White (1992) found that females experienced more constraints than their male counterparts when it came to making decisions about sport and leisure activities. Activities that involved returning home after dark were often restricted and many females were expected to give their parents an accurate account of their leisure activities. This evidence relating to the importance of parents’ viewpoints may partially explain why aspects of the environment did not predict participation in any type of physical activity. It would therefore seem sensible to suggest that future efforts should concentrate more on assessing parents’ perceptions of the physical environment and less on their children’s opinions. For many youngsters, their own view of how safe and desirable the area near to their house is may mean nothing if parental concerns over the safety of that area are too great to allow the child out alone. As well as examining the extent to which parental concerns predict youngsters’ behaviour, therefore, exploratory research should examine the exact nature of the worries held by parents, and the types of issues that are most prevalent in their minds.

Turning to programmes to promote active transport, Tudor-Locke et al. (2001) argue that the best approaches would maximise the health benefits of regular active commuting to school, while at the same alleviating parental safety concerns. The authors describe two approaches that are currently underway. The “Safe Routes to School” programmes typically encourage children to walk and bike to school by lobbying for improved street design, calming traffic and creating traffic-free zones around schools, thus hopefully increasing children’s active commuting by discouraging short distance chauffeuring and reducing hazardous local traffic. The “Walking School Buses” programme (Green, 1999), meanwhile, is a simple volunteer programme that engages parents on a rotational basis to escort small groups of children to school by foot or on bike from an established meeting point or ‘bus’ stop. Whilst these approaches may be more appropriate to younger children than to
adolescents, evaluation of the relative strengths and weaknesses of these programmes might allow some adaptation to make them more appropriate to adolescents.

It is also useful to examine other variables that did not prove to have any relationship with physical activity participation. For example, the finding that self-presentational concerns were consistently unrelated to physical activity participation is in direct contrast with the findings of both the focus groups and the literature review. Sallis et al. (2000), however, found there to be no association between body image and physical activity participation among 4-12 year olds and an indeterminate association between perceived physical appearance/body image and physical activity among 13-18 year olds. One possible explanation for this discrepancy in findings lies in the multi-faceted nature of issues relating to self-presentation and body image, making it difficult to understand using quantitative measures. Indeed, whereas the findings from quantitative research would appear to have been largely inconclusive in this area, qualitative research seems to generally be in agreement on the negative impact of self-presentational concerns on physical activity participation (Bauer et al., 2004; Biscomb et al., 2000; James, 2000; Sleap & Wormald, 2001). Furthermore, the several different tools used to measure body image related issues, along with the general messy picture whereby some studies measure poor body image as a barrier to physical activity whereas others measure improved body image as an outcome of increased participation, all points to the fact that this is one area where the in-depth nature of qualitative research permits a clearer understanding of the role of body image and self-presentation as they relate to physical activity among adolescent girls.

It would seem surprising that issues relating to the importance attached to being physically active were largely unpredictive of participation in the three activity types. As discussed, however, it may be that exercise is carried out as means to a certain end, meaning that the importance or lack of importance would be attached to that particular end as opposed to exercise itself. Regarding sport participation, if a particular sport is carried out for enjoyment’s sake, then it may well be the case that statements around the importance, or lack thereof, of being physically active on a frequent basis are not truly reflective of the intrinsic nature of motivation for that sport. Whilst the importance attached to being physically active should not be overlooked, it may well be the case that statements in this regard need to be more
specific to capture the unique nature of, and the particular attributes attached to, each
activity type.

That mother's participation was not predictive of daughter's participation in any of
the three activity types whilst father's participation was might be due to the
previously discussed point that mothers are often more likely to support their
daughters' activity efforts whilst fathers were more likely to encourage activity
through their own active behaviour Davison, Cutting and Birch (2003). However, as
mentioned in Chapter 2, very few studies have examined how the roles played by
mother and father differ in terms of role modeling, being active with their daughters,
and offering support and encouragement. This is a criticism that could also be
levelled at the current study and, given the lack of clarity of the findings here, along
with the rather inconclusive findings of the literature review, it must be stressed that
future research needs to examine in much greater depth the full nature of both parents’
roles.

In addition to the points made above about those variables that did not predict
physical activity participation, it is also important to note that only a small amount of
the variance was accounted for in both sport and exercise participation. This is
perhaps not surprising as sport and exercise participation could be considered to be
truly multi-factorial, and influenced by a great number of factors to a greater or lesser
extent for particular individuals. Moves towards considering sport and physical
activity participation from a more ecological perspective are, therefore, to be
encouraged so that an understanding of the role of as many factors as possible can be
gained.

An obvious strength of this study is that it examines findings across three different
types of physical activity, allowing a much greater understanding of the relative
importance of social-psychological and physical environmental variables to each
activity sub-group. Such a fine grained analysis has not been carried out previously.
Future research should continue this trend of looking at sub-groups so that
interventions can be specifically targeted and, hopefully, increase effectiveness.
Some of the measures of the physical environment utilised in this study were fairly weak in design, meaning that as great an understanding of these factors as might be desired could not be obtained. Nevertheless, this study highlights the importance of certain physical environmental factors to sport and exercise participation, and raises issues for discussion and future directions. Future research should address these issues in greater detail, using stronger measures to determine more clearly the role of the environment in physical activity participation in this population.

Finally, as previously mentioned, there is some question regarding the reliability and validity of the SAPAC in its four week recall format. Although physical activity levels were comparable with Scottish data (Shaw et al., 2000) for girls aged 10-11 and 12-13, 14-15 year old girls in this study recalled doing a greater amount of activity than their counterparts in the Scottish Health Survey, meaning some caution should be applied when considering the findings of the present study. Future studies should attempt to use measures of physical activity with some demonstrable reliability and validity, whilst at the same time trying to avoid the problems associated with either recall of one atypical week or hazy recall of a greater amount of time. One answer may be to ask participations about physical activity they do in a typical week, whilst bearing in mind that over-reporting of activities is often common in self-report measures.

4.5 Conclusion

In conclusion, only a handful of social-psychological and physical environmental variables explained a small amount of variance in sport and exercise participation, whilst no one variable proved to be predictive of participation in active transport. The results suggest the importance of a positive home environment to sport participation, and of social support to exercise participation. Suggestions to understand better factors relating to active transport include examining parents' attitudes towards their daughters being allowed out unsupervised, and regional variations in active transport behaviour. A move away from the heavily relied on cross-sectional design, for example in favour of longitudinal or mixed method approaches, might also enable a greater understanding of factors relating to each of the three activity types.
Chapter 5

Study 4: Six case study examinations of the ways in which social-psychological factors influence physical activity

5.1 Introduction

Three studies have been reported so far. The first reported relationships between physical activity and selected variables reported in the literature. The second explored adolescent girls' perceptions of physical activity and issues they reported to have a bearing on their participation. The third examined the relationship between social-psychological and physical environmental variables and participation in three types of physical activity. This final study examined how and why certain factors can influence the behavioural decisions regarding physical activity of adolescent girls. One approach that is ideally suited to answering questions of this nature is that of case study research (Yin, 2003).

Many definitions of case studies have been advanced. The stance adopted by Cohen and Manion (1989) is that "unlike the experimenter who manipulates variables to determine their causal significance or the surveyor who asks standardised questions of large, representative samples of individuals, the case study researcher typically observes the characteristics of an individual unit – a child, a clique, a class, a school, or a community. The purpose of such observation is to probe deeply and to analyse intensively the multifarious phenomena that constitute the life cycle of the unit with a view to establishing generalisations about the wider population to which that unit belongs" (pp.124-125).

Furthermore, a case study can be seen to have a number of defining features (Gomm, Hammersley, & Foster, 2000):
• Investigation of a relatively small number of cases;
• Information gathered and analysed about a large number of features of each case;
• Study of naturally occurring cases;
• Quantification of data not a priority;
• The main concern may well be with understanding the case studied in itself, with no interest in theoretical inference of empirical generalisation, although there may be attempts at one or both of these.

Case study research is often descriptive in nature, being undertaken when description and explanation, rather than prediction based on cause and effect, are sought (Merriam, 1988). Case studies generally rely on direct observation of the events being studied and interviews with the persons involved in the events (Yin, 2003). These defining characteristics led to the conclusion that a case study project would be an ideal way in which to further our understanding of the role played by some of the previously identified social-psychological factors in shaping adolescent girls' physical activity decisions.

An ongoing longitudinal study at a local high school/community college provided an opportunity to examine the self-reported physical activity behaviours, body attractiveness ratings, and information relating to friends and family of a cohort of girls over an 18 month period. Examination of changes over time in each of these variables enabled purposive (Chein, 1981) or purposeful (Patton, 1980) sampling of a small group of participants to be investigated in greater depth. Whilst findings from each participant were to be analysed individually, examination of findings across all of the cases would allow for identification of similar characteristics across different groups of individuals, thus adding strength to the outcomes of the study.

The purpose of this study was to attempt an in-depth investigation of selected social-psychological variables with a view to developing a greater understanding of their influence on physical activity in a selected group of adolescent girls. As well as examining changes in the amount of physical activity over a two year period, the study set out to discover how changes in body image, the influence of friends and
family, and changing priorities worked to impact on this physical activity change. The rationale for focusing on these topics derived from a desire to understand or explain the inconsistent findings in both the literature review and in studies two and three in relation to body image and the influence of friends and family. In relation to changing priorities, evidence from study two and, to a certain extent, study three indicated that these may influence physical activity decisions in a number of ways and so were worthy of further investigation.

5.2 Method

5.2.1 Participants

Participants were six girls from a local high school/community college in a small town in Leicestershire. Participants were recruited from an existing sample of girls taking part in a longitudinal study assessing free-time behaviour choices of adolescents and how these choices change over the course of adolescence. Choice of these six participants was based on the principles of purposive (Chein, 1981), or purposeful (Patton, 1980), sampling, that is sampling based on the assumption that one wishes to discover, understand, and gain insight and so should select a sample from which one can learn the most. Unique attributes relating to physical activity participation, who (if anybody) the girls participated with, physical self-perception scores, and BMI were therefore considered across all female participants completing the longitudinal study with the aim of ensuring that the final six chosen for further investigation would prove to be useful and informative. To ensure that the perspectives of girls of differing ages were represented, two girls were chosen from each of the three year groups participating in the longitudinal study. At the outset of the study two participants were in year six (ages 10.9 and 11.2 years), two were in year eight (ages 12.9 and 13.2), and two were in year ten (ages 15.0 and 14.7). The interview stage of the study took place 24 months after the initial study began and so at this stage participants' ages had all increased by two years. The girls were all White European.
5.2.2 Measurement tools

5.2.2.1 Free Time Behaviour Diary
Momentary time sampling diaries, adapted from Marshall (2001), were used to assess participants' free time behaviour choices. The diaries required students to record their primary activities every 15 minutes from 7am until midnight, excluding time spent in school. Each diary was designed to be completed for three weekdays and one weekend day as this had been shown to be the minimum number of days required to represent habitual behaviour. Each reported activity was placed into one of 22 inductively derived categories (Marshall, 2001), and time spent in each category was calculated. For the purposes of this study only time spent in the "sport" category was examined. This category included all physical activities that could be sensibly assumed to involve a reasonable amount of energy expenditure, such as walking the dog or going for a bike ride, as well as those activities that could be classed as more "traditional" sports and exercise. As well as recording participants' primary activities, the diary also recorded, via a choice of numbered options, where the participants were and who they were with. It was envisaged that this additional information, in particular that regarding who they were with, might provide some insight into the relative influence of these factors on youngsters' activity choices. The reliability and validity of the diary has been reported elsewhere (Marshall, 2001; Murdey, 2004).

5.2.2.2 Body composition
BMI and BMI centile status were calculated from height and weight data and Cole et al.'s (1995) UK reference curves. Height was measured using a Holtain stadiometer to the last completed 0.1cm. Body mass was obtained from Tanita TBF 611 scales to the nearest 0.2kg. Full details on the assessment of body composition and intra- and inter-observer reliability are available in Murdey (2004).

5.2.2.3 Physical Self-Perceptions
Body image was measured using the Body Attractiveness scale of the Physical Self-Perception Profile for Children (C-PSPP) (Whitehead, 1995). In addition, the importance attached to having a good looking body was assessed using two questions from the Children's Perceived Importance Profile (C-PIP) (Whitehead, 1995).
5.2.2.4 Parental Questionnaire

A short questionnaire asked parents to report their height and weight, from which BMI was calculated, highest level of education attained, average minutes walked on a week day and weekend day, and whether or not the parent engaged in regular physical activity and if so, how often and for how long. Although it is appreciated that an objective measure of physical activity behaviour could not be obtained from this questionnaire, it was hoped that the information provided would be sufficient to establish the regular behaviour patterns of parents and how they might relate to their daughters’ behaviours.

5.2.2.5 Interview

Semi-structured interviews were carried out to attempt to establish reasons behind the participants’ behaviour choices, links between physical activity and body image, and the influence of friends and family on the participants’ behaviour choices.

Semi-structured interviews are defined by the fact that the researcher knows beforehand what information is desired from the respondents, and therefore the types of questions to be asked (Merriam, 1988). They are an ideal tool for understanding the meaning of questionnaire responses. Semi-structured interviews allow for understanding and meanings to be explored in depth, and can be a way of exploring relationships between different aspects of a situation (Arksey & Knight, 1999). In this regard the interviews differed from the exploratory focus groups previously carried out in that they were guided by a pre-determined list of questions and issues to be explored, although neither the wording nor the order of the questions was determined ahead of time. Conducting interviews in this manner allows the researcher to respond to the situation at hand and to address new ideas on the topic put forward by the respondent (Merriam, 1988). Open ended questioning is common given that the aim of the interview is to encourage communication (Arksey & Knight, 1999).

The interview guide, shown in Appendix H, was developed following the recommendations of Arskey and Knight (1999). This involved starting with a long list of questions and eliminating those that were felt to be unlikely to contribute towards an understanding of the topics under investigation. The remaining questions were then piloted on one girl in each year group who had also completed the
longitudinal diary study but who had not been selected for case study investigation. Following this the guide was amended accordingly. Great care was taken to ensure that the questions were coherent and easy to understand even by the younger girls, and that they followed a logical sequence.

5.2.3 Procedure


For each of Phases 1 – 4 participants arrived wearing loose fitting shorts and t-shirt so that their height and weight could be assessed. Both measurements were taken twice to ensure accuracy. Participants were then asked to complete the questionnaire assessing physical self-perceptions. Upon completion of this questionnaire they were given a momentary time sampling diary to take away and complete, with three weekdays and one weekend day randomly chosen by the researchers, and the parental questionnaire to take home to be completed by one or both parents. Participants were asked to return the diary and the parental questionnaire to the school reception as soon as the four diary days had been completed. Full details of this aspect of the study are available elsewhere (Murdie, 2004).

The six selected participants were then contacted by letter and invited to attend an interview to discuss further the various issues touched on in the previous part of the study. They were informed that they would be seen during a class period for approximately half an hour and asked to discuss openly the relevant issues, as well as having a chance to feedback and ask questions on the study so far. All six girls agreed to participate. The interviews were all carried out in quiet rooms on the school site.

Upon arrival each participant was informed fully of the nature of the investigation. They were told that they would be asked about a variety of topics and that they were
to answer as openly and honestly as they felt possible. They were told that although
the interviews were to be tape recorded, their names would not be used in any future
written work or in conversation with other researchers. They were then asked to sign
a consent form, shown in Appendix I, to indicate that they had understood everything
that had been explained to them and were happy to participate. The sessions then
commenced. To start the session off each participant was asked a factual question
about their physical activity participation. This was devised to be an easy to answer
question that did not require the participants to reflect deeply, meaning that they could
be eased into the interview gently. More searching questions were introduced once
the participants were relaxed, before easing into gentler questions towards the end of
the sessions. Each interview was completed by asking the participants if there were
any topics that they would like to discuss that had not yet been touched on.

Throughout the interviews certain procedures summarised by Arskey and Knight
(1999) were followed in an attempt to foster a climate of trust. These are summarised
below:

**Opening the interview:**
- Being friendly, polite and open;
- Indicating the significance of the study and how useful the participant’s
  comments would be;
- Explaining how the interview would be conducted, for example, roughly how
  long it would last and the sorts of topics that would be covered;
- Giving the interviewee the opportunity to ask questions;
- Asking for permission to record the interviews, rather than just assuming
  agreement.

**During the interview:**
- Listening, making eye contact, and saying encouraging things;
- Being sensitive to signs of emotional reaction;
- Avoiding conveying a sense of urgency or impatience.
Closing the interview:
- Indicating to the interviewees how valuable the information they provided was and expressing gratitude for their participation;
- Confirming what was to happen next: when and how results were to be made available and that the participants would be offered a chance to feed back on the findings.

Prior to commencement of the study ethical clearance was obtained from the university.

5.2.4 Data analysis
Initially data were analysed individually for each participant. The amount of physical activity reported, averaged for weekday and weekend day, BMI and BMI centile, body attractiveness score, importance of having a good looking body, mother's activity and father's activity were all recorded at Phases 1 and 4, and changes between these two phases were noted. Each interview was transcribed verbatim and read through several times. A brief summary report was then prepared for each participant detailing the main findings from both stages of the study.

The data were then analysed deductively using a 'top-down' approach. When this approach is followed, participants' open talk is coded into closed categories, which are derived from the researcher's own prior theoretical framework (Wilkinson, 2003). The case study material can then be arranged as best as possible into a narrative account of the findings, consistent with Merriam's (1988) definition of a descriptive case study. This approach was deemed most appropriate given that the areas for investigation had been determined ahead of the study.

For each participant, tables were drawn up containing the five main headings of Physical Activity, Body Image, Influence of Family, Influence of Friends, and Changing Priorities. The main questions to be answered in each category were then entered under each heading. Information from the diaries and questionnaires was examined and any relevant finding was entered into the table under the appropriate question heading. The interview transcripts were then read through with a view to
discovering more in-depth information and answering the "how" and "why" questions typical of case study research (Yin, 2003). Again, relevant detail was identified and entered into the table in the appropriate place. Each transcript was examined several times until all relevant information had been located and entered into the table. The material in the table was then examined and organised to present the most coherent answer to each question. Following this, a detailed report of the findings for each participant was prepared.

The next stage of analysis was to compare the findings across all of the participants. The approach taken here was that of cross-case synthesis (Yin, 2003), a technique that applies specifically to the use of multiple cases. In cross-case synthesis, tables displaying the data from each individual case are examined to see what similarities or differences exist so that cross-case conclusions can be drawn. By examining findings across all of the cases in this manner, it is possible to probe whether different groups of cases appear to share similar characteristics and so can be considered instances of the same "type" of general case. Cross-case synthesis, therefore, adds strength to the individual case study findings and increases the potential for generalising beyond that particular case (Merriam, 1988).

To perform the cross-case analysis, the tables from each individual case were laid side-by-side and the answers to each of the questions were compared and contrasted. A summary table detailing similarities and differences was drawn up. Trends of findings across participants with similar characteristics were then identified. The main findings were summarised into a report so that tentative theories about different types of individual could be proposed.

5.2.5 Reliability and validity of the data

As with any research that is qualitative in nature, issues of reliability and validity had to be dealt with. For this study, the approach recommended by Merriam (1988) was adopted. Merriam describes strategies to ensure internal validity, reliability, and external validity are all achieved.
Internal validity is defined by Merriam as being concerned with the question of how one’s findings match reality: “Do the findings capture what is really there? Are investigators observing or measuring what they think they are measuring?” (p.166). Six basic strategies to ensure internal validity are outlined. These are:

1. Member checks: taking data and interpretations back to the people from whom they were obtained. Guba and Lincoln (1981) recommend doing this continually throughout the study. Participants were provided with feedback at each measurement phase of the first stage of the study and asked if they had comments or questions on the study so far. At the interview stage they received a verbal summary of the main outcomes of the study so far and again were asked to comment. A brief written report was made available to those desiring further information. Once the study was completed, a final short report was sent to each of the participants, detailing the main findings of the study overall. The participants were again asked to feedback on anything they felt to be inaccurate and confirmation that they were happy with the portrayal of the evidence was sought.

2. Long-term observation at the research site or repeated observations of the same phenomenon: This was achieved by visiting each participant five times in total over a period of 24 months.

3. Peer examination: asking colleagues to review and comment on the emerging findings. Throughout the study peers were asked for their comments and feedback on many aspects including the design of the study and the emerging findings. Many informal discussions were held with colleagues with expertise in a variety of areas, as well as more formal reviews of written work.

4. Participatory modes of research: involving participants in all stages of the study from conceptualisation to writing up the findings. Participatory research was not deemed appropriate for this study. However, participant’s opinions and feedback were sought wherever possible and these opinions were fully taken into account throughout the entire running of the study.

5. Researcher’s biases: clarifying the researcher’s previously held assumption and own standpoint at the start of the study. It is fully acknowledged that this researcher’s opinions will have been biased by some of the strong opinions expressed by participants in the focus group study in particular, and that these
opinions may have led the research into areas that might not previously have been considered to be important. An example here is the topic of changing priorities. This topic had not really been considered as a research topic prior to the focus group study and, although positive importance was associated with sport participation in study three, it was not possible to deduce from this study whether the importance attached to sport declined over the teenage years, nor was any sort of importance attached to exercise/physical activity. Nonetheless, the raising of this topic by the focus group participants, along with the researcher’s recollections of her own attitudes toward sport and physical activity during her teenage years, led to the view that this topic may well be of relevance to many other adolescent girls. Despite this sort of bias, participants in this study were free to express their independent opinions on any of the subjects discussed and indeed were dismissive of topics that they did not feel applied to them.

6. Triangulation (Denzin, 1970): using multiple sources of data or multiple methods to confirm the findings. Methodological triangulation combines dissimilar methods such as interviews, observations, and physical evidence to study the same unit. "The rationale for this strategy is that the flaws of one method are often the strengths of another, and by combining methods, observers can achieve the best of each, while overcoming their unique deficiencies" (Denzin, 1970). Triangulation might have been achieved in this study by interviewing the girls at each stage of the research, so that at every data point, the paper and pen measures would answer the "what" questions, and the interviews would answer the "how" and "why" questions. Unfortunately, there was only one opportunity to interview each participant. Although the study falls short of the ideal in this respect, it is hoped that at least having the one interview adds depth and insight into the findings from the self-completion part of the study.

Merriam (1988) defines reliability as the extent to which one’s findings can be replicated. She argues that the notion of reliability is difficult when applied to qualitative research; indeed, Guba and Lincoln (1981) argue for sidestepping reliability in favour of internal validity: "Since it is impossible to have internal validity without reliability, a demonstration of internal validity amounts to a
simultaneous demonstration of reliability” (p. 120). Lincoln and Guba (1985) suggest that instead of thinking about reliability, we should instead concentrate on the "dependability" or "consistency" of the results. This means that instead of asking that other researchers achieve the same results, we should ask others to agree that, given the data collected, the results obtained make sense. Three techniques outlined by Merriam (1988) to do this are:

1. The investigator should explain the assumptions and theory behind the study, his or her position regarding the group being studied, the basis for selecting participants and a description of them, and the social context from which the data were collected (Goetz & LeCompte, 1984). It is hoped that these objectives are all achieved throughout this report.

2. Provision of an audit trail: Guba and Lincoln (1981) argue that the findings of a study can be verified by following the trail of the researcher. Researchers should present their methods in such detail “that other researchers can use the original report as an operating manual by which to replicate the study” (Goetz & LeCompte, 1984). Again, it is hoped that this objective is achieved through this report and through the documentation and safe-keeping of all stages of the research process.

3. Triangulation: as discussed in relation to internal validity.

External validity is defined as the extent to which the findings of one study can be applied to other situations: “How generalisable are the results of a research study?” (Merriam, 1988). Generalisability in case study research is again seen as problematic: is it possible to generalise from a single case and if so, how? One approach is to assume that it is not possible to generalise from a single case and accept this as a limitation of the method. The use in multi-case or cross-case analysis, however, of sampling, predetermined questions, and specific coding and analysis procedures greatly enhances the generalisability of the findings in the traditional sense (Burlingame & Geske, 1979; Firestone & Herriot, 1984; James, 1981; Yin, 2003).

Some alternative solutions to the notion of generalisability have been proposed. (Cronbach, 1975) uses the concept of working hypotheses, pointing out that since generalisations decay over time, even in the hard sciences, they should not be the aim
of social science research: "When we give proper weight to local conditions, any generalisation is a working hypothesis, not a conclusion" (Cronbach, 1975).

Another popular approach is that of reader or user generalisability. This involves leaving the extent to which a study's findings apply to other situations up to the people in those situations (Wilson, 1979). "It is the reader who has to ask, what is there is this study that I can apply to my own situation, and what clearly does not apply?" (Walker, 1980).

Depending on one's notion of external validity then, Merriam (1988) outlines three ways in which the case study researcher can improve the generalisability of his or her findings:

1. Providing a "rich, thick" description of the findings "so that anyone else interested in transferability has a base of information appropriate to the judgment" (Lincoln & Guba, 1985). It is hoped that this goal will be achieved throughout the presentation of this report.

2. Establishing how typical the individual being studied is compared to others in the same situation, so that other individuals can draw comparisons with their own situations (Goetz & LeCompte, 1984). This will be covered in the results section of the report.

3. Conducting a cross-case analysis, as discussed in the Data Analysis section.

5.3 Findings

5.3.1 Participant 1: "Michelle"

Michelle started the study aged 10.9 years and was 12.9 years old at the time of her interview. Michelle was very active throughout the whole study; in particular she enjoyed dancing and this was evident both in the amount she reported doing in her diaries and in her comments at interview about how much she danced and how she hoped to work in dance and drama when she grew up. The activities Michelle reported in her diaries are summarised below:
Table 5.1: Activities reported by Michelle in the four phases of the diary study

<table>
<thead>
<tr>
<th></th>
<th>Phase 1</th>
<th>Phase 2</th>
<th>Phase 3</th>
<th>Phase 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dancing</td>
<td>3hrs on Tuesday</td>
<td>3hrs 15mins on Monday</td>
<td>2hrs 15mins on Monday</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>1hr 15mins on Tuesday</td>
<td></td>
</tr>
<tr>
<td>Swimming</td>
<td></td>
<td></td>
<td></td>
<td>1hr on Wednesday</td>
</tr>
</tbody>
</table>

As well as the dancing and swimming reported in her diaries, Michelle stated that she regularly liked to ride her bike, play out, and play team games with her friends. Through this participation in a variety of activities, Michelle viewed herself as reasonably active. She reported, however, that she put a lot less effort into her activities now than she did when she was younger, and that she came in earlier from playing out so that she could watch more television:

*Well dancing I've stopped doing, I used to put loads of energy into it, I don't put as much in now, I still do but not as much as I used to. And I come in earlier after I've been playing out. I watch TV a lot of the time, I really like TV so I like to come in to watch TV.*

Michelle explained that she was becoming increasingly tired as she grew older and no longer seemed to have the energy to do as much activity as she had done when younger. Her television habit had crept in when her mother was ill and Michelle had to stay at home and look after her:

*I don't know. When my mum was poorly I stopped doing things because I had to go and look after her and I think that got me, coz I used to be really active and I think that slowed me down, coz I got into a routine where I'd go home and help my mum and then just sit and watch TV but then when she got better I found it hard to get back into the routine that I was in.*

Despite these difficulties, Michelle continued to love her dancing, claiming that she wanted to be involved in dancing and acting when she grew up. Her views of activity were changing, however, in that she was now starting to believe that it was important to be active in order to maintain a good figure. Her ratings of her own body
attractiveness had decreased quite sharply towards the end of the measurement phase of the study, in line with a gradual increase in her BMI and BMI centile:

**Table 5.2:** Michelle’s body attractiveness ratings and actual body size across the four phases of the diary study

<table>
<thead>
<tr>
<th></th>
<th>Phase 1</th>
<th>Phase 2</th>
<th>Phase 3</th>
<th>Phase 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Body attractiveness score</td>
<td>2.5</td>
<td>2.5</td>
<td>2.8</td>
<td>1.7</td>
</tr>
<tr>
<td>Perceived importance score</td>
<td>2.0</td>
<td>1.5</td>
<td>2.0</td>
<td>1.0</td>
</tr>
<tr>
<td>BMI</td>
<td>19.7</td>
<td>20.1</td>
<td>20.4</td>
<td>22.5</td>
</tr>
<tr>
<td>BMI centile</td>
<td>81.6</td>
<td>81.7</td>
<td>82.1</td>
<td>91.6</td>
</tr>
</tbody>
</table>

Despite her perceived importance scores suggesting that she didn't find it particularly important to have a good looking body, Michelle reported herself to be extremely conscious of her appearance, believing herself to be short and fat. She drew comparisons with her friends, whom she saw to be taller and thinner than her, even those who were of a similar weight:

*I'm really fat and all my friends are really pretty and normal and it's really unfortunate that they're all really skinny tall friends and they're really pretty and I'm really short and fat and I do look really odd when I'm walking with them.*

*She’s like, she’s the same weight as me but she’s skinnier than me. I’m light but I don’t look light and she's, she looks like, she's more beautiful and she's not fat.*

Michelle’s concerns with her appearance meant that she worried that others judged her, classing her as “the fat one on the end” when she was with her friends. She took care to cover up during PE classes by wearing baggy clothes, and avoided swimming in public due to concerns over her appearance in a swimming costume:

*And I won’t go swimming. I really like swimming, I really love doing it but I don’t like my body so I've got a pool at home, a hot tub and stuff and I do loads of things in my garden because I don't like doing it at the public pool because I feel fat in my swimming costume.*

It seemed that although Michelle didn’t mind her friends seeing her in her sporting attire, she was extremely wary of letting boys see her, mainly because she felt that
they would tease her and call her fat. She also felt that people said things about her appearance behind her back, and she found this extremely distressing.

The relationship, therefore, between Michelle’s actual body size, her lower ratings of her physical attractiveness, and her spoken concerns regarding her appearance is clear. It seems that these concerns came about with the onset of her periods:

Well I used to be thinner but I put weight on because before I start my period I eat loads and then I just stop eating and then after my period I eat loads again and I eat for a day loads so I put on loads of weight but I try to get it off by doing dancing but I don’t think it all comes off.

Although it is only possible to hypothesise, it seems that perhaps Michelle entered puberty earlier than her friends, resulting in her filling out at a time when many of her friends still possessed child-like figures with less body fat. This would perhaps explain her increasing BMI centile and, along with her own constant comparisons to her peers, would go some way to accounting for the anxiety she felt about how her body looked.

Turning to the influence of her family, Michelle’s mother reporting doing no activity at all whilst her father reported exercising twice a week. Michelle explained her mother’s inactivity by the fact that she had replacement knees and so was no longer able to be active. Both parents had positive attitudes towards activity, however, and they encouraged her in their own ways: whilst her father pushed her into being active and getting up and about generally, her mother offered more emotional support and encouraged her to keep dancing, knowing how much she wanted to do it when she grew up. Michelle’s mother also helped with her television viewing by restricting the amount she was allowed to watch each evening, ensuring she was practicing her dancing or out playing with her friends instead.

Although Michelle reported her father to be the parent she did more activity with, leading to her being more active on a day to day basis, she felt that it was her mother’s support that was most influential, especially since her mother had allowed her to continue her dancing when her father wanted her to stop:
Yeah, my dad wanted me to stop doing dancing because I didn’t spend enough time with my family but my mum knows what I want to do when I’m older and I talk to my mum more than my dad.

Although she didn’t say so explicitly, it seemed that she got on with her mother better than her father, sometimes finding her father a little aggressive in his nature:

My dad doesn’t really know what I feel because he can say things and it’s hurtful but I don’t think he really means to be hurtful and I think I over-exaggerate it in my head, I know I do but I still find it hurtful, I’m really mardy, I know I’m really mardy but I don’t stop being mardy...

Despite the positive influence of her parents, Michelle expressed a preference as she had grown older for spending more time with her friends, stating that she now found her mother embarrassing and barely spoke to her sister or her father. All of the activities Michelle reported in her diaries were carried out with friends and this was reflected in Michelle’s statements about how active her friendship group was:

We all do active stuff apart from one or two and they just do nothing. I do everything with my best friend and we have a group and I go dancing with my best friend and some of my friends in the other half year.

Michelle’s was a happy friendship group who all enjoyed their dancing and she felt no pressure to behave in a certain way with her friends. If anything, Michelle’s evident enjoyment of dancing had encouraged some of her friends to take it up too, thus resulting in an active group philosophy and a positive outlook regarding physical activity. Michelle felt that her friends were not crucial to her continued dancing, however, owing to her wanting to do this when she grew up:

Yes because that’s what I want to do when I’m older so I want to keep on doing it coz I do something called Act One where it’s acting and dancing and I want to do performing arts when I’m older so I’d definitely do it if they did stop doing it.
Some barriers stood in the way of Michelle being as active as she might have liked. As previously mentioned, she battled with her urge to watch television and felt that she needed more sleep as she had grown older. Additionally, she felt increasing demands due to school work and sometimes struggled to fit everything in:

*Well sometimes I get loads and loads of homework at the same time. It's easy to do and everything but it's just finding the time to do it in and I have to have some time by myself, I can't just do homework homework homework.*

It seemed, however, that despite identifying the issues of her tiredness and homework as being problematic, Michelle didn't really see a solution to the problem and had simply resigned herself to being tired and overworked.

In summary then, Michelle was an active girl who particularly enjoyed dancing, wanting to pursue a career in it when she grew up. Her parents both offered support in their own styles, although she now preferred the company of her friends, who were mostly also involved in dancing, creating a positive attitude towards physical activity among most members of the group. Despite her continued enjoyment of dancing, Michelle was starting to feel a pressure to be active to maintain a certain appearance, and felt herself to be fat and unattractive when compared to her friends, a problem that may have been exacerbated by a rather high BMI centile. She also reported that she had less energy for physical activity and felt constantly tired, and that increased homework pressures meant that she sometimes struggled to fit everything in.

5.3.2 Participant 2: “Susan”

Susan was 11.2 years old at the start of the study and 13.2 years of age at the time of her interview. Susan took part in a lot of dancing all the way through the study: although she reported no dancing in Phase 4 of the study, she stated in her interview that she danced twice a week so it is likely that she simply didn’t fill in her diary on any dancing days in Phase 4. The activities reported by Susan in her diaries are summarised below:
### Table 5.3: Activities reported by Susan in the four phases of the diary study

<table>
<thead>
<tr>
<th></th>
<th>Phase 1</th>
<th>Phase 2</th>
<th>Phase 3</th>
<th>Phase 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dancing</td>
<td>2hrs 15mins on Friday</td>
<td>4hrs 45mins on Saturday</td>
<td>1hr on Thursday</td>
<td>2hrs 15mins on Friday, 45mins on Saturday</td>
</tr>
<tr>
<td>Walking</td>
<td></td>
<td></td>
<td>15mins on Thursday</td>
<td>30mins on Friday</td>
</tr>
</tbody>
</table>

In addition to dancing, Susan reported enjoying PE at school and swimming with friends on Wednesday nights, although she stated that she had had to stop her swimming owing to a clash with her dance classes:

_I do an extra half an hour of dance. I used to do swimming and stuff but I quit. Because it started being on the night that I did dancing because I swapped the night I did dancing._

Despite the type of activity Susan preferred changing, and despite no activity being recorded in her phase 4 diary, Susan’s verbal account of the amount of dancing she did lends evidence to the fact that her activity levels had remained fairly stable throughout the course of the study.

Susan’s perceived attractiveness scores remained fairly stable and relatively high throughout the study, and this was backed up by her comments suggesting that she was happy with her appearance and, owing to the amount of dancing she did, didn’t worry about gaining weight. Her BMI centile remained fairly average throughout the study, tying in with her lack of concern over this issue. The importance Susan attached to looking good did increase throughout the study, however; this may have been due to an increased emphasis among her friends on dieting and looking good, which may have had some effect on Susan. Susan’s body attractiveness and perceived importance scores, along with her BMI and BMI centiles are shown below:
### Table 5.4: Susan’s body attractiveness ratings and actual body size across the four phases of the diary study

<table>
<thead>
<tr>
<th></th>
<th>Phase 1</th>
<th>Phase 2</th>
<th>Phase 3</th>
<th>Phase 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Body attractiveness score</td>
<td>2.3</td>
<td>2.7</td>
<td>2.8</td>
<td>2.8</td>
</tr>
<tr>
<td>Perceived importance score</td>
<td>1.5</td>
<td>3.0</td>
<td>4.0</td>
<td>3.0</td>
</tr>
<tr>
<td>BMI</td>
<td>18.2</td>
<td>18.7</td>
<td>18.1</td>
<td>18.9</td>
</tr>
<tr>
<td>BMI centile</td>
<td>62.5</td>
<td>63.9</td>
<td>50.5</td>
<td>57.4</td>
</tr>
</tbody>
</table>

As mentioned, Susan stated that she was happy with her appearance and did not worry about gaining weight because she was active:

*I don't normally think about what food I'm eating because I go dancing and stuff and get exercise and I don't normally put much weight on so I don't think about it very much.*

Despite her own balanced approach, however, Susan explained that many of her friends were overly concerned with their weight and appearance. She stated that many of them complained constantly about being fat, and some of them had tried diets despite being only around 13 years of age. Encouragingly, Susan found this behaviour annoying and expressed no desire to be involved in it. She reported that her mother frequently told her not to stop eating; this may have had a beneficial approach on her attitude towards her own appearance. As stated, however, Susan’s ratings of the importance of having a good looking body increased throughout the study. Given that she was only 13 at the time of her interview, and that matters such as this can continue to be influential throughout adolescence and indeed into adulthood, it would be interesting to follow Susan throughout her adolescence to see how her attitudes changed as she became a little older.

Despite not worrying about her weight, Susan did admit to caring more now about looking good on a day to day basis:

*I used to not care. [I now care about] hair and make up and stuff. We go into the loos every lunch and do our make up. And we all fall out because more people get the mirror. [This started] when we came up to high school, about ten or eleven.*
In addition, she reported that whereas she used to enjoy such activities as splashing in puddles, she wouldn’t like to do those sorts of things now because she would get wet and dirty. She expressed a dislike of the idea of playing rugby for similar reasons. Encouragingly, however, Susan stated that whilst it was important to look good during the daytime, her appearance did not matter so much during PE. So long as she wasn’t getting covered in mud and could return to looking good after her class, she seemed quite happy to participate fully in, and enjoy, her PE classes.

Susan’s parents reported themselves to both exercise once a week whilst Susan herself reported that only her mother took exercise. Susan’s dancing all took place independently of her parents’ activity and she didn’t feel that her own activity was influenced in any way by what her parents did. Despite this lack of association between her parents’ and her own activity, Susan did state that her parents encouraged her to active. The advice offered differed between her mother and her father:

*My dad normally gets on at me more to go out and play with people but my mum normally gets on at me to stay in and practice my dancing.*

Susan also stated that her parents were happy to drive her to her dance classes. She found this to be extremely helpful as she lived in a different town to her friends and so would not have been able to dance with them if it were not for her parents taking her to the classes. In this case then, parental support in the form of verbal encouragement, chauffeuring, and paying of class fees was obviously much of an influence on Susan’s activity than her parents’ actual physical activity levels.

Turning to her friends, Susan reported that most of them were involved in either dancing or horse riding:

*Some just don’t do anything, they just sit at home all day and they’re probably a bit plumper but most of us just dance and then Sian horse rides and stuff.*

All of the dancing that Susan reported in her diaries was carried out with friends and this was backed up by her statements in her interview. Susan had been dancing since she was four and believed that would continue to go whether her friends did or not. In
fact she saw that her friends' behaviour was more influenced by hers as opposed to her behaviour being influenced by theirs since many of them had joined one dance class after seeing how much fun she and another friend had there. Overall Susan felt that all of the members of her friendship group were independent minded and that nobody would be pressured into doing something they didn't like or humiliated for doing something the rest of the group didn't want to take part in. She did feel that her friends might not approve of her participating in muddy sports such as rugby or football, but she wasn't at all concerned by this as she didn't particularly like the idea of those sports herself. Generally it seemed that there was a harmonious group philosophy that dancing was fun and, from Susan's account, most of the girls enjoying doing this together.

It seemed that Susan's attitude had remained fairly constant throughout her life in that she had always enjoyed dancing and continued to do so. She didn't particularly feel that there were competing behaviours stopping her from being as active as she might like, especially since going dancing with her friends meant she got to spend time with them at the same time as being active. The only problem Susan reported was living in a different town to her friends. As mentioned, her parents drove her to dance with her friends and although she generally found this helpful, she did think that sometimes her living elsewhere was slightly problematic:

*Because I live in Loughborough so I have to get home and I have to wait for my mum and dad to come back from work so I don't normally do anything when I get to Loughborough because all my friends are in Shepshed and so I just normally stay in and do my homework and stuff.*

Susan felt that she was too young to be able this situation but looked forward to being a little older so that she could be independent and spend more time with her friends in activities such as swimming and dancing. For the time being, however, she seemed to be largely content with the situation as it was.

In summary then, Susan considered herself to be very active, enjoying not only dancing, but also PE and swimming. Her ratings of her own attractiveness remained high throughout the study, tying in with an average BMI centile and her verbal
statements that she was happy with how she looked. Unlike many of her friends, Susan was not interested in dieting, but she did express an increased importance attached to looking good on a daily basis. Despite not being very active themselves, Susan’s parents encouraged her to be active as much as possible and provided support for her activities by driving and paying for her. Most of Susan’s friends were physically active and, rather than feeling that she was influenced by them, Susan reported that it was she who had encouraged many of her friends to start dancing. The only problem Susan reported with regard to being as active as desired was living in a different town to her friends. Since her parents were happy to drive her, however, she did not consider this problem to interfere too greatly.

5.3.3 Participant 3: “Debbie”

Debbie was aged 12.9 years at the start of the study and 14.9 years at the time of her interview. In phases 1 to 3 she reported doing a lot of swimming; this then ceased at phase 4. She reported this to be down to an injury but also stated that she had started to become bored by swimming, “because you do the same thing over and over again”, and that her participation may well have started to decline anyway. Indeed, it seemed generally that whereas Debbie had enjoyed a variety of activities when she was younger, she now found most of them boring and so had reduced her participation:

Yeah coz when I was little I used to do running and I used to go and do cross country and swimming and go to basketball and stuff whereas nowadays I don’t so I see the difference between when I used to enjoy it and now it just seems like a chore.

Debbie did still enjoy walking her dog, however, “because I walk somewhere different every day and it’s enjoyable … I can go to different areas and keep it fresh”, and continued to do this throughout the study. The activities Debbie reported in her diary are summarised in Table 5.5.

Another factor contributing to Debbie’s decline in activity was a perceived pressure to spend more time with her friends, and she reported that she had stopped attending swimming club on a Friday night so that she could do this. She did take her friends with her when she walked her dog and as a group they continued to swim together on
Table 5.5: Activities reported by Debbie in the four phases of the diary study

<table>
<thead>
<tr>
<th></th>
<th>Phase 1</th>
<th>Phase 2</th>
<th>Phase 3</th>
<th>Phase 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Swimming</td>
<td>45mins on Monday</td>
<td>45mins on Monday</td>
<td>2hrs on Monday</td>
<td>2hrs 15mins on</td>
</tr>
<tr>
<td></td>
<td>1hr 15mins on</td>
<td>1hr 15mins on</td>
<td>1hr 15mins on</td>
<td>Wednesday</td>
</tr>
<tr>
<td></td>
<td>on Friday</td>
<td>on Friday</td>
<td>on Friday</td>
<td></td>
</tr>
<tr>
<td>Walking the dog</td>
<td>30mins on Tuesday</td>
<td>1hr on Monday</td>
<td>30mins on Monday</td>
<td>30mins on Monday</td>
</tr>
<tr>
<td></td>
<td></td>
<td>30mins on</td>
<td>30mins on</td>
<td>Wednesday</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Monday</td>
<td>Monday</td>
<td></td>
</tr>
<tr>
<td>Dancing</td>
<td>45mins on Monday</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

a Wednesday evening. Debbie reported that by and large, however, her friends were now more interested in going out than in being physically active. It seemed that the group mentality was to spend as much time together as possible, and Debbie felt that if she was not around as often as her friends liked her to be they would become upset with her. She also reported that her friends were now more important to her than being physically active and so she wouldn’t like to let them down by choosing activity over spending time with them:

*If they’d asked you to come out and then you say no because you’re going out to walk the dog or something you’d feel bad that you’ve said to your friends that you’d come out, you’d feel that you’d let them down.*

Despite expressing a preference for spending time with her friends over exercising, Debbie expressed a great deal of concern over her appearance. Her attractiveness ratings were low, and she felt herself to be short and fat and covered herself up as much as possible:

*Yeah coz I have a friend that’s really skinny and now she’s putting on weight and her mum’s telling her but I think she’s the size I would want to be coz I know that I’m bigger than the rest of my friends and I’m shorter than them and coz I’m a bigger size I feel that I look huge next to them so ... I walk around and I wear a cardigan that covers myself whereas the others are all wearing short tops and skirts and stuff whereas I don’t like to do that because I don’t want to show my big bulges off.*
Debbie’s BMI rose gradually throughout the course of the study and her BMI centile was extremely high, demonstrating a clear relationship between her actual body size, her perceived body size, and her appearance related concerns. Debbie’s body attractiveness scores, perceived importance scores, BMI, and BMI centiles are shown below:

Table 5.6: Debbie’s body attractiveness ratings and actual body size across the four phases of the diary study

<table>
<thead>
<tr>
<th></th>
<th>Phase 1</th>
<th>Phase 2</th>
<th>Phase 3</th>
<th>Phase 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Body attractiveness score</td>
<td>1.8</td>
<td>1.7</td>
<td>1.7</td>
<td>1.7</td>
</tr>
<tr>
<td>Perceived importance score</td>
<td>3.0</td>
<td>2.0</td>
<td>2.0</td>
<td>2.5</td>
</tr>
<tr>
<td>BMI</td>
<td>22.5</td>
<td>24.7</td>
<td>27.8</td>
<td>27.8</td>
</tr>
<tr>
<td>BMI centile</td>
<td>90.1</td>
<td>95.8</td>
<td>98.8</td>
<td>98.6</td>
</tr>
</tbody>
</table>

To add to her appearance related worries, Debbie felt that most people generally perceived thin people to be better than larger people, and that others didn’t look beyond the surface when judging Debbie herself:

Yeah I worry that people don’t actually see what I am inside, they look at me and think that I’m not the size that they want so they don’t know the person inside because they don’t want to know the person on the outside.

This mentality had apparently been learnt from her mother, whom Debbie reported to also be overweight. Debbie’s mother seemed to have drilled into her the importance of not ending up large, and encouraged Debbie’s dieting attempts:

I read my mum’s magazines that have got diets in and my mum tells me which ones to do and so I usually do whatever my mum tells me to do and she helps me out by buying chocolaty foods for my brother and sister because they’re quite thin and then for me she buys low fat chocolaty things. I’ve got my own little section in the fridge that has healthy things in, because I pick at food more than I eat meals so I go and pick at the healthy section rather than going to the chocolates my brother and sister go to. My mum’s a bigger lady and she doesn’t want me to turn out like she has and she’s always telling me that I don’t want to be her size because I won’t have any clothes to fit into so she tries to help me make sure I don’t turn out that size which is helpful because if I wanted a chocolate bar out of the other box she’d tell me to
remember that I don’t want to be her size and if I’ve done a good diet for a week and I’ve lost a few pounds she’ll buy me a little present for the end like a new top to help me stick to the diet which is helpful.

It seemed that this ongoing pressure, however, only served to draw Debbie’s attention even more to her body size, and to reinforce her ideas that to be large was to be inferior.

Debbie stated that her appearance related concerns had contributed to her decline in swimming, as she now did not like to be seen in her swimming costume:

Well one reason with swimming is because I feel bigger and so I would wear a giant t-shirt but then it’s harder to swim with a t-shirt on and so I take it off but I will not get out of the water without it on so then no-one can see what I’m like and then when I get out I get my best friend to go and get me my towel so that when I’m coming out of the water I can cover myself up so I don’t have people seeing me.

She felt that people were staring at her because she was bigger and she felt particularly conscious in front of older boys. Swimming with her friends helped as they would make a joke of the situation and cheer Debbie up. Debbie also reported feeling safer when she swam with her father:

I go to other ones with my dad, Sundays he takes me swimming and I feel comfortable because there’s a whole range of people doing their own thing so I don’t really mind when I go to other pools, I feel more comfortable, and I think because my dad’s there he makes me feel comfortable as well because I know no-one can hurt me if my dad’s there, he’ll protect me.

As well as swimming with her father, Debbie had also started going to the gym with her mother. Although neither parent reported being particularly active in the parent questionnaires, Debbie stated that her mother had increased her activity lately in an attempt to lose weight. It seemed that Debbie felt less self-conscious when she exercised with her parents, although the emphasis with her mother was definitely on dieting as opposed to adopting a healthier long-term lifestyle:
Well me and mum go on diets together and she'll take me to the gym and she goes at the same time.

From Debbie’s conversations it became clear that she had learnt that the only purpose of exercise was to help with weight loss, and that dieting and the pursuit of thinness were of the utmost important. However, whereas Debbie felt that her mother’s constant encouragement to diet was positive, it seemed from the outside that her pre-occupation with her weight had almost reached obsessional levels and was not at all healthy.

In summary, despite enjoying many activities, especially swimming, as a youngster, Debbie now felt bored by most of them and her activity had declined. The only activity she seemed to enjoy now was walking her dog. Debbie reported an increased pressure to spend time with her friends and although the group swam together on a Wednesday night, it seemed that collectively they were becoming more interested in going out than in being physically active. Debbie’s ratings of her own attractiveness were low and she stated that she felt fat. This tied in with her high BMI. Debbie felt judged on her appearance and covered herself up as much as possible. She also found activities such as swimming difficult due to her body being on display, although she reported feeling safer if she took part in physical activity with her parents. Debbie’s attitudes seemed to have been learnt from her mother, who had pressed home to her the importance of not growing up to be large. Although Debbie reported her mother to encourage a healthy lifestyle, it seemed that there was an over-emphasis on dieting and not enough emphasis on a balanced approach to eating and exercise.

5.3.4 Participant 4: “Gemma”

Gemma was 13.2 years old at phase 1 and 15.2 years old at the time of her interview. She was very involved with horses and horse riding but had become less interested in other activities during the course of the study. She felt that although the number of activities she did had decreased, her day to day activity level had increased with looking after her horse. She also felt that caring for and riding her horse was very physical and a good lifestyle activity. Overall, therefore, she was happy with the amount of physical activity she did:
Yeah it has but the amount of activities I’ve done has gone down but the amount of activeness in my activity has gone up because I used to do dancing, swimming and that was the only things I used to do and then I stopped doing them and then did horse riding which is a lot of hard work and is an every day thing so you’re always on the move and always doing things.

The activities reported by Gemma in her diaries are summarised below:

<table>
<thead>
<tr>
<th>Activity</th>
<th>Phase 1</th>
<th>Phase 2</th>
<th>Phase 3</th>
<th>Phase 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Horse riding</td>
<td>75mins on Wednesday</td>
<td>1hr 15mins on Monday</td>
<td>1hr 15mins on Saturday</td>
<td>2hrs 45mins on Sunday</td>
</tr>
<tr>
<td>Cycling</td>
<td>2hrs on Monday 1hr on Tuesday</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Walking</td>
<td>30mins on Tuesday</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Although Gemma reported that all of her horse riding had taken place with friends, she largely attributed the decline in the remainder of her activities to wanting to spend more time with her friends as she had gotten older. She considered most of the girls in her friendship group to not be particularly active or concerned with their health, preferring instead to smoke and try to impress boys:

No, most girls now are smoking at this age and if they were that bothered about their health they wouldn’t do it. Girls nowadays are more interested in lads, going out and just having fun really, I think girls’ views have changed about what they should do out of school hours, they’re interested in different things now rather than exercise.

It was Gemma’s belief that attitudes towards activity ran through groups and that if you were in a group with an active philosophy, you would be more likely to be active yourself. Conversely, if most of the members of your group were not active, Gemma felt the chances were that you too would be inactive. She believed that this was down to most girls being overly concerned with what other people thought of them:
Yeah because at the end of the day most girls think other people's views are more important than what they think about themselves so if they're in a group and those people are doing other things like going and they want to separate from that group, I think they'd find it hard to get back in with that group so they probably think they'll just hang around with the group, it's just easier to tag along.

Gemma commented further on this point by saying that it was important to keep yourself in your friends' good books so as not to have them talking about you behind your back. Owing to this pressure, she felt that although most girls did consider taking exercise, the majority of them would decide not to do it, choosing instead to stay with their friends. The risks of being seen exercising and talked about were too great. Despite this, Gemma had managed to strike a balance whereby she found time for her horse, her friends, and her other activities. She stated that although it had been hard for her at first to tell her friends that she wouldn’t be spending time with them, they had gradually come to accept the situation:

*I just say it straight, I'm going to do this tonight, I won't be out. People just get used to it. At first they thought I was skanking them but now they're used to it. It is difficult at first because you know they're talking about you so it's just the way girls work now isn't it? It's just bitchiness all the time within a girl group. But they're used to it now.*

It seemed in this respect that Gemma was an independent minded individual who was not prepared to compromise on her beliefs and her individual identity.

Gemma's body attractiveness score was high in phase 1 of the study. It then dropped quite significantly at phase 2 before gradually rising again towards the end of the study. This tied in with a rise in her BMI centile at phase 2, which then gradually lowered throughout the remainder of the study. Her ratings of the importance of having a good looking body were high throughout the study and although Gemma reported becoming more aware of her appearance as she had gotten older, she stated that she felt confident enough in herself to not be overly concerned with how she looked.
Gemma's body attractiveness scores, perceived importance scores, BMI, and BMI centiles are shown below:

**Table 5.8: Gemma’s body attractiveness ratings and actual body size across the four phases of the diary study**

<table>
<thead>
<tr>
<th></th>
<th>Phase 1</th>
<th>Phase 2</th>
<th>Phase 3</th>
<th>Phase 4</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Body attractiveness score</strong></td>
<td>3.6</td>
<td>2.2</td>
<td>2.7</td>
<td>3.5</td>
</tr>
<tr>
<td><strong>Perceived importance score</strong></td>
<td>3.5</td>
<td>3.5</td>
<td>3.0</td>
<td>3.0</td>
</tr>
<tr>
<td><strong>BMI</strong></td>
<td>19.0</td>
<td>19.8</td>
<td>19.8</td>
<td>19.3</td>
</tr>
<tr>
<td><strong>BMI centile</strong></td>
<td>52.0</td>
<td>60.0</td>
<td>54.0</td>
<td>42.4</td>
</tr>
</tbody>
</table>

Gemma stated that the main reason for becoming more aware of her appearance was an awareness of other people noticing and commenting more on how she looked:

*I think so yeah because people’s views of you change as you get older and that affects how you think about yourself, it’s like, coz when I was at high school people didn’t really make any comments towards me like “oh you look nice today” or “oh you’ve lost weight” or whatever but then as they’ve got older people notice different things and now I take that into account and think maybe I have changed.*

She stated that although she now thought more about how other people saw her, and that other people’s opinions did matter to her, any concerns in this area were not important enough to her to make any difference to how she lived her life. She did believe, however, that a less confident individual might take others’ comments on board a little more:

*Not with me coz I’m quite happy with the way I am now but if, I think other people would [worry] if they weren’t doing much exercise and people said negative things they’d maybe think they should do something about it. It depends who you are really. I’m quite confident with myself.*

When asked who she felt contributed most to adolescent girls’ appearance related concerns, Gemma mentioned the media briefly before saying that she felt although many girls might desire a celebrity’s thin body, most would only think about it and would not actually take any action to change their appearance. She concluded by
saying that she felt the biggest influence was girls' concerns over what boys might think of them:

*It all comes down to lads really and what lads think and do you think I could make him fancy me if I do this with my hair or if I look better, if I look skinnier? That affects what girls think because at this age it's lads.*

On their parent questionnaires, Gemma's mother reported no activity whilst her father reported being active most days of the week. This tied in with Gemma's reports of her father cycling to work each day and generally being very energetic and youthful. Gemma stated that her father helped with her horse and that she found this helpful:

*Well my dad helps with my horses, he's really into it and that helps if your parents are interested in what you're interested in.*

Although her mother was not active herself, Gemma stated that she ensured Gemma spent enough time with her horse and in her various other hobbies. She felt that because she was already active, there was no need for her parents to encourage her in this way, although she was sure they would have plenty to say if she did become lazy:

*Well coz I am quite active anyway they'd say something if I was just slobbing round the house sitting down watching TV all day, they'd be like come on, do something and get moving but coz I'm not really like that they don't say that.*

Gemma seemed to respect both of her parents a great deal and so their views were very important to her. She stated that although she did all of her hobbies because she enjoyed them so much, she would not like to lose her parents' respect and so always considered them when making decisions about how to live her life. Gemma seemed very happy with the support offered by both of her parents and through their different styles, it seemed they had created a very happy environment in which Gemma could carry out her choice of lifestyle activities.

Overall then, it seemed that Gemma's priorities were very well balanced in that she managed to find time for her horse, her friends, and her theatre work. Although she
seemed less concerned nowadays with more traditional sports and exercises, she was very mindful of keeping fit and healthy and this was reflected in her choice of a lifestyle activity. It seemed that Gemma’s life was so well organised that neither her hobbies, spending time with her friends, nor duties such as homework stood in the way of her being as active as she liked. Furthermore, her balanced approach to her appearance meant that she continued to enjoy activity for its own sake as opposed to as a means by which to achieve a certain body shape, whilst her parent’s support and assistance ensured that she spent enough time in her chosen activity and did not become lazy.

5.3.5 Participant 5: “Jennifer”

Jennifer was 15 years old at the start of the study and 17 years old at the time of her interview. She participated in a lot of netball and had recently taken up karate. Although Jennifer’s average time spent in sport and activity increased from 22.5 minutes per day in phase 1 to 41.25 minutes per day in phase 4, by the time of her interview she felt that her participation in all activities had declined considerably. She attributed this decrease in activity to exam pressures and a lack of time and money:

Definitely. I don’t really know why, probably just running out of time. I do karate but I haven’t done that in two months because of my exams so... it is pretty much just the time and I would join a gym but it’s the expense of that as well so... But hopefully I’m going to get my exercise back up in the summer holidays.

The activities Jennifer reported in her diaries are summarised below:

| Table 5.9: Activities reported by Jennifer in the four phases of the diary study |
|-----------------------------------|-----------------------------------|-----------------------------------|-----------------------------------|
|                                  | Phase 1  | Phase 2  | Phase 3  | Phase 4  |
| Netball                          | 30mins on Tuesday           | 30mins on Wednesday          | 1hr 15mins on Friday             | 1hr 15mins on Tuesday           |
| Gym                               | 1hr on Wednesday             |                                 |                                   |                                   |
| Karate                           |                                   | 1hr 15mins on Wednesday       | 1hr 30mins on Wednesday          |                                   |

Pressed further about her lack of time, Jennifer admitted that although she did still enjoy sport and physical activity, it seemed now to have become lowest on her list of
priorities. It seemed that she led an extremely busy life involving part time work and several hobbies, as well as preparing for her A’ level exams:

*Probably because my week is getting more full with my part time jobs which is on Saturday and Sunday mornings when I presume most sports clubs are and also after school I have a lot of things, mainly with my music because I play the flute, I have orchestra to go to and I have my lessons and then I run a homework club at the high school so that takes up a lot of my time so really because I’ve got all of those extracurricular activities, once I get home and I’ve done my homework there isn’t really much time to do sports and I think it probably does take the least priority, which is a shame because I do enjoy it and I would like to do more activities but yeah, it’s definitely something to do with time.*

Asked if she could see any solution to this lack of time, Jennifer replied that she thought she would simply have to wait until the summer holidays and do more sports then. She did not seem overly concerned with the situation however, simply stating that she thought it would be good when summer finally came around and she got to be a little more active.

Jennifer’s ratings of her own attractiveness remained relatively high from phases 1 through to 3 before dropping suddenly at phase 4, whilst the importance she attached to having a good looking body remained fairly stable across all four phases. Despite remaining low, her BMI and BMI centile had gradually increased throughout the study:

<table>
<thead>
<tr>
<th></th>
<th>Phase 1</th>
<th>Phase 2</th>
<th>Phase 3</th>
<th>Phase 4</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Body attractiveness score</strong></td>
<td>3.3</td>
<td>3.3</td>
<td>3.0</td>
<td>2.2</td>
</tr>
<tr>
<td><strong>Perceived importance score</strong></td>
<td>4.0</td>
<td>3.0</td>
<td>3.0</td>
<td>3.0</td>
</tr>
<tr>
<td><strong>BMI</strong></td>
<td>18.0</td>
<td>19.0</td>
<td>19.4</td>
<td>20.1</td>
</tr>
<tr>
<td><strong>BMI centile</strong></td>
<td>18.7</td>
<td>30.5</td>
<td>33.2</td>
<td>40.8</td>
</tr>
</tbody>
</table>

When asked about this at her interview, Jennifer reported that although she knew she had put on some weight during the course of the study, she still knew that she was thin and did not need to be overly concerned with her weight or appearance. The
weight gain, along with her lack of time for exercise, however, had led to Jennifer feeling out of shape:

*I feel like a slob, I feel like I need to tone up. I feel like I’ve put on weight and the fact that I don’t do as much exercise, it kind of annoys me and makes me feel like I should be exercising and it’s stressing me out because I haven’t got time to exercise but yeah, to be honest I still eat loads and I can’t stop eating chocolate and stuff so it’s not like I’m working really hard to lose it or to tone up or anything, I just haven’t got the time to exercise. It does make me feel less about myself, I think when I was younger because I did lots of exercise and I was so young so I hadn’t really put on weight and I hadn’t started growing and I probably felt better about myself then.*

Jennifer reported that she would be quite happy to be lazy if it weren’t for the fact that she felt like she needed to tone up. She felt that as girls became older and started to go out more often they became more aware of how they looked and so appearance became more important. She thought that most girls of her age were now more conscious of their bodies and that mainly these concerns centred around trying to look good for boys:

*I don’t know, I don’t think in the past it’s been any less but I think it’s this age group in general that everybody reaches where people feel more like they have to impress lads I suppose, I think that’s what it boils down to.*

Despite expressing these concerns, Jennifer reported that she didn’t worry about her appearance or what other people thought of her when she was exercising. Indeed, when pressed further it seemed that she had a fairly relaxed approach to the whole subject and refused to allow it to bother her to a great extent:

*No, not in that way, I don’t feel like people are looking at me when I’m exercising. I’m pretty much, I think me and my sister, because I’ve got a twin sister, we’re quite laid back to how we feel about ourselves, it’s like oh, I’m minging today and then we get on with it so it’s not like, I don’t feel self-conscious a lot of the time, it’s just, and we joke about it with my friends who talk about how our belly flobs over when we sit down and stuff but no, it’s pretty much always a bit jokey which is probably why I*
haven't had the motivation to do anything yet but no, it's all quite laid back, it's not deeply psychological or anything, it's not messing with my head particularly ... I think I'm just aware that I haven't really got time at the minute and I just keep bearing in mind that when I do have time I will go to the gym just to feel a bit better about myself.

Her relaxed approach seemed to have been helped by the fact that both her parents and her friends were supportive in this area: whilst her parents frequently reassured her that her appearance and weight were both fine, the ethos in her friendship group was that everybody was perfectly acceptable as they were and nobody should lose weight or attempt to look like some prescribed norm:

No definitely not. I've got a really nice friendship group and I've got a lot of friends and we're all really supportive of each other and we're all different sizes so it's definitely not important within my friendship group. There's no need to lose weight or anything.

Overall then it seemed that although Jennifer was becoming more aware of her appearance, she did not allow it to concern her too much. She concluded the discussion on this topic by stating that she didn't really feel that she had a problem with her weight, it was perhaps more a case of her feeling slightly less confident of herself over the years, something that she felt to be natural to most girls as they got older.

Jennifer's parents reported themselves to be fairly inactive, although Jennifer stated in her interview that they had recently become more health conscious and started attending a gym. This health consciousness had caused Jennifer to consider her own activity and think that she too should be making a little more of an effort. Jennifer also reported that her parents were supportive in that they paid for her activities and encouraged both her and her sister to adopt a healthy lifestyle. Although Jennifer did not participate in any activities with her parents at the time of the study, they had promised to take her to the gym during her summer holidays. Jennifer also stated that her sister and herself did almost everything together. Between her parents and her sister then it seemed like she a very healthy and supportive family unit.
Turning to her friends, Jennifer considered all of her friendship group to be healthy and interested in sport but felt that everybody's activity had declined over recent years:

*It's weird because within my friendship group we're all quite healthy and we all eat well and a lot of us are saying oh I joined a gym yesterday and I don't really, I'm not really sure to be honest, I don't know, I think we all know the importance of exercising and it's a shame that we haven't got more sports clubs because me and my friends used to always be involved in all the sports clubs at our last school so now we're all pretty much as a group stopped doing exercise but no, we all enjoy doing sports and being in teams.*

As the above statement suggests, however, it seemed to be a lack of availability that had caused this general decline. Jennifer commented further on this by saying that there seemed to be a lack of sports clubs that were especially for girls. When asked if she felt that being physically active might be seen as inappropriate for girls of her age, she said that she felt that was definitely not the case and that everybody in her friendship group thoroughly enjoyed sports:

*We all enjoy doing sports and being in teams so it's not like anyone sees anything wrong with wanting to do lots of sports at our age. No it's definitely not uncool because me and my group of friends, we got karate together and we're all thinking about joining a gym together so no, we enjoy, we like doing sports and games.*

Jennifer also indicated that she would be interested in trying traditionally male sports such as rugby or football, indicating that for her at least, issues relating to the appropriateness of sport for girls were not important.

The problem of a lack of availability of sports was also discussed in relation to the fact that Jennifer felt that the reduced opportunities made what was on offer seem less enjoyable to her. When she was involved in sports, she reported, she had enjoyed her participation very much. Now, however, all she could do was go to a gym and she felt that this did not sound like much fun at all. In this sense she had come to see exercise more as a necessity than something to be done for the sakes of it. She felt
that this was a shame and that both she and her friends would appreciate an increased opportunity to take part in more enjoyable activities.

In summary, although Jennifer was very active throughout the diary part of the study, she reported in her interview that her activity levels had recently decreased due to exam pressures and a lack of time and money. Jennifer’s ratings of her own attractiveness started high but dropped towards the end of the study, tying in with a gradual BMI increase, although her BMI centile did remain below average. Jennifer reported that her increased weight combined with her decreased activity had led to her feeling out of shape and she admitted that over the years she had become more concerned with her appearance. She refused to take the subject too seriously, however, and made a joke about it wherever possible. Jennifer reported her parents to recently have become more health conscious and felt that this was rubbing off on her. Her parents also supported her activity choices and paid for her activities as much as possible. All of her friends were interested in sport and activity and nothing was considered inappropriate for girls of their age. A decrease in availability, however, had led to a decline across the group in participation. Jennifer stated that this decreased availability had led to her seeing physical activity more as a necessity than as something to be enjoyed.

5.3.6 Participant 6: “Amanda”
Amanda was 14.7 years old at the first measurement phase and 16.7 years old at the time of her interview. She was extremely active – her main interest was dancing but she had also become more interested throughout her adolescence in exercise as means of weight control and so now also participated in aerobic types of activities. As a result of this interest in weight control, the amount of activity Amanda did increased throughout the course of the study so that by phase 4, she averaged 20 minutes per day more of activity than at phase 1. The activities Amanda reported in her diaries are summarised in table 5.11.

Amanda’s perception of her own attractiveness did not change throughout the study but was slightly below average. The importance she attached to having a good
Table 5.11: Activities reported by Amanda in the four phases of the diary study

<table>
<thead>
<tr>
<th></th>
<th>Phase 1</th>
<th>Phase 2</th>
<th>Phase 3</th>
<th>Phase 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dancing</td>
<td>4hrs on Tuesday</td>
<td>2hrs 30mins on</td>
<td>1hr 30mins on</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1hr on Saturday</td>
<td>Tuesday on</td>
<td>Tuesday on</td>
<td>Tuesday</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2hrs 30mins on</td>
<td>2hrs 30mins on</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Thursday on</td>
<td>Saturday</td>
<td></td>
</tr>
<tr>
<td>Exercise</td>
<td>15mins on</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Wednesday</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>30mins on</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Friday</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Walking</td>
<td>75mins on</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Friday</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aerobics</td>
<td></td>
<td></td>
<td>75mins on</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Monday</td>
<td></td>
</tr>
</tbody>
</table>

looking body did increase slightly throughout the course of the study and was generally quite high. Amanda stated that she had become more concerned with her weight and her general appearance over the last couple of years, since hitting adolescence and since moving from high school to college at the age of 14. She spoke of having recently lost weight as she felt that this had gradually increased over the course of the last two years. Despite this perception of having gained weight, however, Amanda's weight had actually remained constant over the course of the study, although her BMI centile was rather high. It is understandable, therefore, that she might feel large when comparing herself to her peers or to celebrities in the media, something which she reported doing a lot. Amanda's body attractiveness scores, perceived importance scores, BMI, and BMI centiles are shown below:

Table 5.12: Amanda's body attractiveness ratings and actual body size across the four phases of the diary study

<table>
<thead>
<tr>
<th></th>
<th>Phase 1</th>
<th>Phase 2</th>
<th>Phase 3</th>
<th>Phase 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Body attractiveness score</td>
<td>2.0</td>
<td>1.8</td>
<td>2.0</td>
<td>1.8</td>
</tr>
<tr>
<td>Perceived importance score</td>
<td>3.0</td>
<td>2.5</td>
<td>3.0</td>
<td>3.5</td>
</tr>
<tr>
<td>BMI</td>
<td>22.1</td>
<td>23.4</td>
<td>23.0</td>
<td>23.0</td>
</tr>
<tr>
<td>BMI centile</td>
<td>79.0</td>
<td>85.8</td>
<td>81.6</td>
<td>79.2</td>
</tr>
</tbody>
</table>

When asked how the transition from high school to college impacted on her appearance related concerns, Amanda replied that not only did sport become less...
important than work once she was at college, but also the emphasis changed to be much more appearance based:

Yeah coz when I was at the high school, up to the age of about fourteen, I played every sport, I just didn't care, but as we came up it's like fashion and make up and stuff and people just didn't bother and I still did dance and a couple of things but then I just started to do a bit more because I realised you've got to do a bit more exercise here but yeah, as soon as I came up to the college it's like work and I just started working and I didn't bother as much, I gave up all my sport.

Amanda recognised that along with these changing emphases on sport and appearance, adolescence was a time when girls' bodies changed and they tended to put on some weight. From this point of view she felt that, for her at least, diet and physical activity were very important. As well as activity being a means by which Amanda could reduce her weight, however, she also had felt it necessary to reduce her weight so as to be comfortable when being seen in activity by others:

Well I'm doing a dance show this week, I got a lead role in it for the first time so I was really nervous but I think that might have been an incentive to lose a bit of weight as well so I'm looking forward to that and I've got quite a lot of confidence now about it so yeah, it does help.

Amanda stated that when she had felt herself to be bigger, she had not liked to wear shorts for activity as she disliked her legs. She had also avoided swimming as she did not like to be seen in her swimming costume. A final appearance related concern for Amanda was that she felt she went extremely red when exercising:

Well I go really red anyway which is part of the problem why I'm not very comfortable doing activity at school because I just go bright red and it takes hours to go down again so that's quite embarrassing.

To counter all of these problems, Amanda reported that she did as much activity as possible outside of school so that nobody would see her. When asked whose opinions
concerned her the most, she replied that the views of both boys and girls were important to her:

*I don't know, coz there's lads of course but they've started to get beer bellies so that's okay, I'm not so bothered but girls as well because they're very, you can say, you know, you'll lose weight and then you'll put a tiny bit on and they'll be really nasty about it or say something behind your back so both sexes really.*

Overall then, it seemed that although Amanda felt less conscious of herself since having lost some weight, she was greatly concerned with her appearance both generally and when performing sports and physical activities. It would have been interesting to follow Amanda through to her adult years to examine how her actual body size and perceived appearance continued to change, and how these changes impacted on her appearance related concerns.

Turning to her family, Amanda's mother reported taking up activity during the course of the study whilst her father was a regular exerciser all the way through. Although Amanda's view was that her parents were not particularly active, she did state that she and her mother had started to go to aerobics classes together. She felt that this was helpful as one would encourage the other if either was feeling lazy:

*My mum comes to aerobics with me, we've decided to go twice a week so that's good coz if I don't want to go she'll say oh, come on and vice versa so that's good.*

It didn't seem that Amanda was particularly influenced by her parents' activity, however, as she had been dancing now for several years and she reported that it was she who had encouraged her mother to start aerobics rather than it being the other way around. She felt that her parents did not offer much support or encouragement for her activities, but acknowledged that this was most likely because she had always been so active and so had had no need to be pushed:

*Well they don't really say much because I've always done some sort of activity so they've not really said anything so I don't really know.*
Amanda appreciated that her mother paid for all her activities and so supported her this way, and it seemed that her parents were happy to support whatever activities she chose to do, even if they were not vocal about it. By and large, however, it seemed to be the case that Amanda was autonomous in her activity choices and quite happy to self-motivate without her parents’ assistance.

Amanda didn’t feel that her friends were particularly influential with regards her own activity. Although about half of the dancing reported in her diaries was with her friends, she said that activity wasn’t something they really discussed anymore and most of them tended to do their own things. Amanda preferred it this way because, as previously stated, she generally preferred to exercise alone:

"Yeah, I think it’s more individual, if you do any sports now, whereas it used to be in groups, after school, football or cross country, now basically we do our own thing, we do it individually, we prefer not to go round, it’s not a group thing, I do all my stuff on my own but I prefer to do it out of school because there’s no-one to see."

Another reason for Amanda not discussing her exercise with her friends was that she felt they would often try to persuade her to do something else if she told them she was going to an exercise class. She seemed to feel that this was almost deliberate on their part to stop her doing her exercise, although whether it was simply a bid by her friends to try to persuade Amanda to spend more time with them is hard to say. Since Amanda was so motivated, however, and attached such importance to being active, she felt that not saying anything was often the best solution to this problem.

When asked if particular sports or activities might be seen as inappropriate among her friendship group, Amanda replied that she thought not, although generally it might be frowned upon for girls of her age to take part in activities that would leave them dirty and sweaty. She noted that this only applied to girls and that it was still perfectly acceptable for boys to go out and get dirty:

"I think the boys as well, they, perhaps it’s a bit of a stereotype they play football a bit more and there’s less, like they can go out and perhaps have a game of football and come back in all hot and sweaty and nothing’s said but if I was to do that everyone
would, well I go really red anyway which is part of the problem why I'm not very comfortable doing activity at school because I just go bright red and it takes hours to go down again so that's quite embarrassing.

Amanda extended this point by saying that she thought girls' priorities in general changed as they got older. She felt that many girls became more appearance conscious and less willing to participate in sports and physical activity, and that it was important for individuals to challenge this:

*I think whilst you're trying to be body conscious you've got to try not to be too vein as well and get out there and do something and I think girls are just quite worried about how they look all the time and if they're going to come to school looking a mess or whatever but you've just got to overcome that. I think you've just got to, when you get to this age you've just got to make a decision to change your lifestyle really and just adjust to it. I think it's the most important time for deciding on your physical activity so you need to get people involved in sports and try and continue the enthusiasm.*

Overall it seemed that whereas Amanda had once enjoyed being active simply for the sake of it, her main concern now was with exercise as a means of weight control. Although she stated that was aware of the importance of being active for other health benefits, she felt that for her, the priority was to eat well and take plenty of regular exercise. For her this was the best way to maintain the appearance that she reported to be so important to adolescent girls.

When asked if anything stood in the way of her being as active as she might like, Amanda replied that it was harder now as she had more homework and was a very conscientious student. However, she stated that she always made sure not to sit down for too long and to get up and take a walk from time to time. In this regard it seemed that Amanda had struck a healthy balance between her necessary seated activities and getting up and moving around.

To summarise, Amanda had always enjoyed dancing but had recently taken up other exercise in order to control her weight. She had only an average perception of her own appearance and reported becoming more concerned with this over recent years.
This, combined with a rather high BMI centile, led to Amanda feeling uncomfortable with herself. This discomfort caused Amanda to prefer to exercise alone so as not to be seen by others. In addition, she did not like to discuss her activities with her friends as she felt that often they would try to persuade her to do something else instead. Amanda and her mother had recently started attending aerobics together. Amanda’s mother also paid for all of her activities. Aside from this, however, Amanda did very little activity with her parents and felt that their support was not particularly necessary since she was motivated in herself. Amanda stated that although it was sometimes difficult to be as active as she might like owing to school pressures, she always made sure to get up and move around as often as possible.

5.4 Cross-case synthesis and discussion

Analysis across all six cases produced some interesting findings. Firstly, examination of the amount of sport and physical activity undertaken revealed little variation across the three different age groups. Table 13 shows the mean minutes per day reported by each of the girls at phases 1 and 4. This shows that there is little to separate the older girls from the younger ones. Indeed the lowest amount of reported activity was by Susan (year 8) at phase 4, although as previously discussed, it seems from her interview that she had in fact remained active throughout the study, and the choice of recording days in her phase 4 diary had not captured that week’s activities particularly well.

<table>
<thead>
<tr>
<th></th>
<th>Michelle</th>
<th>Susan</th>
<th>Debbie</th>
<th>Gemma</th>
<th>Jennifer</th>
<th>Amanda</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phase 1</td>
<td>45</td>
<td>35.75</td>
<td>37.5</td>
<td>63.75</td>
<td>22.5</td>
<td>30</td>
</tr>
<tr>
<td>Phase 4</td>
<td>52.5</td>
<td>11.25</td>
<td>25</td>
<td>41.25</td>
<td>41.25</td>
<td>45</td>
</tr>
</tbody>
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The girls’ verbal accounts of their sports and activity participation also revealed that most had remained reasonably active throughout the study. Only Debbie (year 10) reported decreasing her activity due to a loss of interest and, although Jennifer (year 12) felt that her activity had declined recently due to a lack of time, she felt this to only be a temporary problem and looked forward to being active again over the summer when schoolwork pressures were not so intense. It is important to
acknowledge, however, that although the girls reported some fairly extended lengths of time being physically active, by and large they tended to be active on only one or two days of the week at each stage of the study. In this regard, therefore, they were falling some way short of reaching recommended activity levels.

Despite this shortfall in physical activity levels, it is at least encouraging that by and large the girls reported still enjoying at least some types of physical activity. It is likely that if females have a positive perception of physical activity, the battle to encourage them to do more will be less difficult. Other qualitative research in the UK has found physical activity to still be popular among the majority of adolescent girls, with most taking part in activities out of school (Flintoff & Scraton, 2001). As was the case for the girls in our study, participants in Flintoff and Scraton’s study reported participation to be mainly with friends or female relatives.

Turning to the activities favoured by these six girls, only a small total number of activities were reported, and only three of these with any frequency. Dancing and walking were the most popular activities, both being reported by four of the six girls, and being represented by girls from all three of the age groups. Swimming was reported by one girl in year 8 and one in year 10. Neither of the year 12 girls reported taking part in swimming, however, and both of the year 10 girls stated that they found it increasingly boring. The remaining four activities of horse riding, netball, karate, and aerobics were each reported by only one girl. The activities of dancing, walking, and swimming were also found to be popular in the study of Scottish adolescent girls, suggesting that these might be suitable activities to promote to girls of this age group.

Similar to the findings of Flintoff and Scraton (2001), many of the activities that the girls reported participating in did not link to the sorts of activities undertaken in school PE, and this finding has been mirrored in other research (Talbot, 1993; Williams & Woodhouse, 1996). The older girls in our study also spoke of how a lack of availability of sports in schools had impacted negatively on their participation; this replicates the finding of Taylor et al. (1999) that girls were enthusiastic and interested in physical activity but frustrated by a lack of opportunities to participate. One suggestion made by Taylor et al.’s participants to improve this situation was to establish activity programs before and after school to encourage participation. Girls
in Flintoff and Scraton's (2001) study, meanwhile, complained of how the restricted choice of activities in school PE were often outdated and inappropriate, and of how this lack of choice dampened their enjoyment of PE. As Flintoff and Scraton point out, the constraints under which PE teachers work must be recognised and unreasonable demands must not be placed on them. Listening to the opinions of adolescent girls, however, and trying to provide a more comprehensive choice of relevant activities might go some way to enabling continued participation among more youngsters.

Examination of the activities considered by the girls to be appropriate or inappropriate revealed some discrepancies in opinions. The activities participated in by the girls involved both those that could be seen to be more traditionally female, such as netball, swimming, dance and aerobics, and those that might be viewed as less traditional, such as karate. At a more general level, both of the year 10 girls commented that by and large sport and physical activity were not really seen as appealing to girls of their age group. Susan (year 8) and Amanda (year 12) still enjoyed activity but both felt that they would not enjoy activities that made them muddy or dirty. Jennifer (year 12), on the other hand, was very keen to try rugby and football and bemoaned the lack of availability of traditionally male sports to girls like herself and her friends. Whilst evidence remains, therefore, of some girls shying away from dirtier activities and wishing to maintain a certain appearance, this trend may be becoming less strong than in previous years, with some girls possibly starting to challenge established stereotypes. This point requires further investigation and consideration.

The girls' motivations for physical activity revealed an interesting picture. Whereas the two year 8 girls continued to enjoy their dancing simply for its own sake and participated with friends, both of the girls in year 10 had become increasingly fed up with sports and exercise and reported feeling more pressure to spend time with their friends in other activities. Although Gemma did not bow to this pressure and had swapped her sports and exercise for a lifestyle activity, this combination of boredom and friend pressure had led to Debbie reporting a decline in participation in most activities. The girls in year 12 both reported increased time pressures due to schoolwork. Amanda's body consciousness, however, ensured that she always made time for physical activity, whilst Jennifer reported activity taking a lower priority but
feeling out of shape as a result of this. A tentative theory from this finding might be that physical activity is fun and enjoyable to girls up to the age of about 12, after which it loses its appeal in favour of teenage "hanging out" type activities. By the age of 16 or 17, girls might come to see exercise as a necessity to maintain a certain appearance and, depending on time pressures and priorities, start to make more time for it again. The types of activities enjoyed by the girls lends further evidence to this theory: whereas dancing was popular among the younger girls, Amanda (year 12) reported starting aerobics during the latter phases of the study and Jennifer expressed an interest in her interview going to the gym. Future research should examine in detail adolescent girls' changing motivations for sport and physical activity so that effective age appropriate interventions can be delivered.

Turning to the issue of body image, it was clear that for these girls at least, appearance concerns were not related to age or the process of going through adolescence. Amongst these six girls, one each from each of the three year groups was happy with her appearance whilst one was not. Additionally, the highest and lowest scores on the body attractiveness scale of the PSPP were both obtained by year 10 girls. Across the 18 month measurement period, three girls' body attractiveness scores remained constant. Of those that did change, Michelle's (year 8) perceived attractiveness declined sharply at phase 4 in line with her reported onset of her periods, and an increase in her BMI. Jennifer (year 12) also scored lower at phase 4; this was related to a gradual increase in her BMI and BMI centile, and her feeling out of shape due to a lack of opportunity to exercise. Perhaps most interestingly, Gemma's body attractiveness ratings dropped at phase 2 before gradually rising again through phases 3 and 4. Examination of Jennifer's BMI and BMI centile showed that these had both risen at phase 2 but had then gradually reduced towards the end of the study.

Further investigation of the relationship between body satisfaction and actual body size revealed a clear association for the six girls in this study. Each of the three girls who obtained lower scores on the body attractiveness scale of the PSPP (Michelle, Debbie and Amanda) had a higher than average BMI, with Michelle and Debbie both having BMI centiles in the top 10%, and Amanda's BMI being at the 79th centile. Susan, on the other hand, had reasonable body attractiveness scores and an average BMI throughout the study. She also stated in her interview that she was satisfied with
her appearance. The findings in the literature on this area are mixed: although several studies have documented that adolescents, especially girls, incorrectly perceive themselves as overweight (Moore, 1993; Mueller, Field, Yando et al., 1995; O'Dea, Abraham, & Heard, 1996; Page & Allen, 1995), Davis (1997) reports both body weight and body fat to have consistently been found, especially among females, to correlate positively with both body dissatisfaction (Bailey, Goldberg, Swap, Chomitz, & Houser Jr., 1990; Brodie & Slade, 1988; Davis, Durnin, Dionne, & Gurevich, 1994) and "feeling fat" (Strauman, Vookles, Berenstein, & Higgins, 1991). For the girls in our study, body satisfaction seemed to be a direct consequence of actual body size.

Appearance related concerns were also mentioned in relation to such aspects as hair, make up, and fashion, and all of the girls voiced concerns in this area to a greater or lesser extent. This corresponds with Fox, Page, Armstrong and Kirby's (1994) assertion that perceptions of overfatness, face and hair dissatisfaction, and general preoccupation with looks are all strongly associated with self-esteem for adolescent girls. Fox et al. argue that overfatness is just one aspect of physical appearance that youngsters are sensitive about, and that perceiving one's nose to be too large or ones' complexion spotty may be more dominant for some than issues concerning fatness or physique. Despite this, concerns relating to body size were seen to impact on physical activity participation much more than other appearance related concerns: Susan, Gemma, and Jennifer, all of whom reported being reasonably confident with their appearance by the time of their interview, all stated that there were no activities they would avoid on account of their appearance, and that by and large they were not concerned with other people's opinions of them when doing physical activity. Michelle, Debbie and Amanda, on the other hand, all voiced concerns about their appearance whilst being physically active, and none of them liked the idea of being seen in a swimming costume or tight fitting sports clothing. When pressed further, it seemed that these concerns related mainly to being seen by boys. Adolescent girls' restraint from swimming due to the revealing nature of the swimming costume has been documented elsewhere (James, 2000). However, whilst all of the participants in James' study reported feeling uncomfortable in their swimming costumes, only those with greater body dissatisfaction reported concerns in the present study. Hausenblas, Brewer and Van Raalte (2004) assert that self-presentational anxiety may occur when the normal clothing of a particular activity requires individuals to reveal more of their
bodies than they are comfortable with. This, teamed with the link among these girls between perceived body size, actual body size, and perceived attractiveness, might explain why only the larger girls in this study felt uncomfortable in revealing attire.

Differences in the reactions to appearance related concerns arose between Michelle and Debbie, in years 8 and 10, and Amanda in year 12 in that whereas Michelle reported now putting less effort into her activity and Debbie reported reducing her overall activity to avoid being seen by others, Amanda had increased her activity so as to reduce her body size and feel better about herself. This is consistent with Leary's (Leary, 1992) assertion that self-presentational concerns can be associated with either increased or decreased exercise behaviour. The preference of Amanda for exercising alone is also consistent with the findings of Spink (1992) and Belling (1992) that women high in social physique anxiety were more likely than women low in SPA to express a preference for exercising alone. It seemed, therefore, that whereas the younger girls simply worried and avoided threatening situations, the slightly older girl was prepared to take action to make a difference. This ties in with the previous hypothesis that older girls begin to see physical activity as a means of achieving a certain body shape and avoiding overweight.

The time of transition from lower to higher school was reported by both Susan and Amanda to be a time when appearance-related concerns had increased, with physical activity participation consequentially being questioned. The transition from primary school to high school has been reported elsewhere to be associated with a decline in self-concept (Marsh, 1989; Rosenberg, 1979; Simmons, Blyth, Van Cleave, & Bush, 1979) and Berk (1991) has argued that changing to a new school environment and adjusting to new expectations from teachers and peers may cause adolescents to question their ability to cope with their behaviour and performance, which may have a negative effect on their self-concept. Both of the girls in our study reported that as new friendship groups from various lower schools formed, an increased emphasis on looking good had led to them feeling insecure about being physically active in front of relatively new friends. Additional pressures related to the time of transfer from primary to high school have been reported elsewhere (Thompson, Humbert, & Mirwald, 2003). Participants in this study reported an increase in school size, greater competition, less teacher / coach attention, the formation of cliques, a loss of self-
confidence, and an increased academic focus to all have a negative influence on participation. This period could be seen, therefore, to be a critical time for adolescent girls and attempts to make them feel secure in their new environment must be made if continued participation in physical activity is not to be threatened.

The relationship of parental activity to daughter’s activity seemed to be fairly weak among these girls, although some associations did exist. Jennifer was the only girl to report being influenced by the physical activity examples set by her parents. In terms of physical activity carried out with their parents, both Debbie and Amanda reported exercising with their mothers: in both cases these activities had commenced recently and were being carried out for weight loss purposes, indicating a possible link in this area for slightly older girls. On the other hand, Michelle, Debbie and Gemma all reported engaging in activity with their fathers, and for Michelle and Gemma at least it seemed that these activities were of the general getting out into the fresh air variety, and were carried out purely for their own sakes. Although the numbers of girls participating with each parent were similar, therefore, the reasons for participation seemed to differ, suggesting that mother and father may offer different types of physical support for their daughter’s activity.

All of the girls reported that their parents were supportive of their physical activity in other ways. Where necessary parents paid for activities and most of the girls mentioned that their parents encouraged things like dance practice and generally ensured that their daughters did not sit around all day and become lazy. All of the girls seemed appreciative of their parents’ support, the only exception to this being Michelle who reported occasionally finding her father’s style a little aggressive. Given that these six girls were generally reasonably active, therefore, and given this reported parental support, a link between daughter’s activity and parental support, as opposed to parental role modelling, could be hypothesised to exist. This contrasts with Mota and Queiros’ (1996) assertion that role modelling was the most important factor for increasing physical activity in girls. Support for the importance of parental support, as opposed to parental role modelling, comes from a longitudinal study assessing the impact of childhood and adolescent physical activity experiences on adult physical activity perceptions and behaviours (Thompson et al., 2003). Women in this study who were considered active as children and adolescents recalled positive
physical, emotional, and financial support to be as important as active parental role models, suggesting that what may be most important is what the parents do to encourage their daughters' activity, as opposed to the activity of the parents themselves. Coakley and White (1992) provide further evidence for the significance of parental encouragement by reporting how influential parents were to continued participation when teenage girls in their study wanted to give up.

Turning to the influence of friends, all of the girls reported at least some of their activities to be with friends, but different patterns emerged regarding the girls' perceived ability to be active without friends, and attitudes of the friendship groups towards sport and physical activity. Both of the year 8 girls reported the majority of their friends to enjoy activity, and to place no pressure on them to be involved in other competing activities. These girls also stated, however, that they would be quite happy to continue their activity if their friends ceased their participation. Although it did seem that these two girls' obvious enjoyment of dancing had been partly responsible for at least some of their friends also commencing dancing, how they would react if they were placed in a new situation of having to go to dance class alone is, of course, impossible to say.

As previously stated, the attitudes of the two year 10 girls were that sport and physical activity were not enjoyable, and both Debbie and Gemma were pressured by their friends to do other things instead. Debbie had bowed to this pressure, however, whilst Gemma had not. The reasons for the different responses of these two girls are unclear. It may simply be the case that Gemma enjoyed horse riding so much that she was not prepared to sacrifice it for her friends whilst Debbie no longer seemed to enjoy physical activity. It may also be that confidence issues played a part: whilst Debbie spoke in her interview of being concerned with her friends' opinions of her and not wanting to upset them, Gemma stated that she simply made it clear to her friends that sometimes she would spend time with them and other times she would not. Whilst this had proved difficult at first, she commented, her friends had soon become used to the idea and now knew it meant Gemma thought no less of them.

The attitudes of the friends of the two year 12 girls were different. Whereas Jennifer reported hers to be a group who were all keen on sport and supportive of one
another's sporting efforts, Amanda stated that she no longer talked to her friends about sport or physical activity. She said her group tended to do their activities alone and to keep private what they had done. She found this to be the best way to operate as when she did mention any planned activities to her friends, she often felt they would try to persuade her to do other things. Whilst patterns seem to exist for both year 8 and year 10 friendship groups, therefore, theories of the attitudes of year 12 groups are harder to generate, although it may simply be that these are two examples of the different ways in which older friendship groups can operate. This positive or negative influence of friendship groups has been documented elsewhere (Thompson et al., 2003): female adults in this study recalled that whilst some friends encouraged active pursuits, others would try to persuade their friends to engage in more sedentary activities instead. One woman in this study reported that getting her friends together for activity was difficult as most would simply reply that they would rather go for coffee instead. Other studies have reported adolescent girls spending most of their free time with their friends and being influenced in their physical activity decisions by their friends' attitudes and behaviours (Taylor, Yancey, Leslie et al., 1999), and girls declining to be physically active because none of their friends are doing it (Browne, 1992). It would seem, therefore, that the effect of a friendship group on an individual's sport or physical activity choices really could vary depending on the individual and her circumstances.

Turning finally to priorities and barriers, some patterns did emerge. Both of the year 8 girls spoke of friends taking an increased priority in their lives, as did Debbie (year 10), whilst the two year 12 girls reported schoolwork now being more important to them. In terms of enjoyment of sport and physical activity, both of the year 8 girls still found it enjoyable, whilst the year 10 girls were both becoming fed up with traditional sports and exercise and were favouring the lifestyle activities of dog walking (Debbie) and horse riding (Gemma). Whereas the year 12 girls both still enjoyed physical activity, the lack of availability led to Jennifer seeing it as more of a chore, whilst Amanda was seeing it more and more as an aid to weight loss. For the elder girls then, enjoyment no longer seemed to be as straightforward as it was to the younger girls.
A variety of barriers were reported, as might be expected, and these seemed to vary according to the individual. For example, Susan reported that living in another town to her friends restricted her participation, Debbie found seeing her friends to interfere with her participation, and Jennifer was busy with homework, part time jobs, and playing the flute. Gemma, on the other hand, did not report any barriers as she ensured she always made time to do everything that was important to her. Whilst Gemma could be seen as an example of how people can make time for activity if it is important enough to them, the variety of barriers reported by the remaining girls should not be overlooked and are an example of how so many factors can be perceived to interfere with physical activity participation. Of course, the finding of several barriers being reported to interfere with participation is not new, although as mentioned in reference to the focus group study, the expression of so many barriers may simply be another way of saying “I have other priorities” (Sleap & Wormald, 2001). The increased priority attached to competing factors, therefore, coupled with a decline in enjoyment across the teenage years, could well contribute to a perception of any barriers being much more difficult to overcome. Providers of physical activity opportunities to adolescent girls should concentrate on making the activities as enjoyable as possible across all age groups. A consistently high level of enjoyment may ensure that physical activity remains a priority and that potential barriers are not perceived in as threatening a manner to ongoing activity participation.

5.5 Summary and Conclusions

Six individual case studies were carried out to help understand how adolescent girls’ views of and participation in physical activity changed over a two year period, and how certain factors influenced physical activity decisions. Data were analysed deductively and were presented individually for each participant before comparisons between the six girls were drawn.

Data revealed that although participation generally tended to be on only one or two days of the week, for these youngsters physical activity did not tend to decline across their teenage years and there was little to separate the younger from the older girls in terms of the amount of physical activity. Consistent with this the girls reported
continuing to enjoy sports and physical activity throughout their teenage years, with only one participant indicating that physical activity no longer held much attraction for her. Perceptions of and uses for physical activity appeared to change across the teenage years, however, with younger girls enjoying participation simply for its own sake and older girls becoming more concerned with exercise as a means of attaining a certain physique.

Appearance-related concerns were associated with actual body size, with larger girls reporting greater unhappiness with their bodies than the thinner girls, regardless of age. Those who were more body-conscious reported feeling aware of this when participating in physical activity, especially when wearing revealing outfits or when boys were present. Whereas the younger girls simply reported feeling fat and avoiding physical activity, however, the older body-conscious girl took more exercise to try to improve her appearance and avoided the discomfort felt in front of others by exercising alone. Self-perceptions of body attractiveness, therefore, may operate in either a motivating or demotivating way.

Examination of data in relation to parents revealed parental support to be much more important amongst these girls than parental role modelling — whilst little association was seen between parental activity and daughter's activity, the positive influence of physical, emotional, and financial support was mentioned by all of the girls in the study. Whilst the influence of parents seemed to be consistent across all ages, however, the role of friends was seen to change as the girls became older. For the younger girls this meant that physical activity was undertaken with most of their friendship group whilst by the age of 14 or 15, pressure was increasing to spend time with friends in other activities. Although the two older girls reported very different attitudes towards physical activity amongst their friends, the evidence indicated that by this age the girls were independent and made their physical activity decisions based on their own thoughts and values.

Priorities were seen to change across the teenage years, with the younger girls reporting friends to be more important to them, and the older girls stating that homework and part time jobs were now taking priority over other activities. As might be expected, a variety of barriers to being physically active were reported, although
the ability of one girl to make time for friends, physical activity, and her other commitments served to demonstrate how the reporting of barriers to physical activity may simply be an excuse for a lack of priority attached to this area.

Overall the data show some commonalities that exist across all ages and sub-groups of girls that can be used to guide the provision of targeted information. For example, parents could be educated on the positive contribution that they could make, for instance by offering support for active interests and by encouraging the girls to continue with activity when their motivation is waning. Providers of physical activity opportunities could be encouraged to listen to the voices of adolescent girls and make activities available that are considered relevant and in keeping with the times. For some girls the opportunity to try activities traditionally seen as inappropriate for girls, such as rugby or martial arts, might be relished.

The data also highlight sub-groups of girls that may need to be targeted individually. These include girls with appearance-related concerns, who may need to be encouraged to participate in non-threatening, female-only environments, where non-revealing attire is acceptable and where the emphasis is drawn away from appearance. Opportunities could also be created for girls who wish to be active but whose friends' interests lie elsewhere. The provision of activities for like-minded individuals could lead to new friendships being formed based on a shared interest in particular activities.

Given the increasing popularity amongst youngsters of "hanging out", it is a limitation that this study did not examine the role of environmental factors on these girls' physical activity levels and decisions. Walking is arguably a popular activity choice amongst adolescent girls and if aspects of the neighbourhood allow for physical activity to occur through walking whilst the girls are 'hanging out' with friends, then the promotion of physical activity may well become a much less challenging and much more successful venture for all those involved. Future qualitative work should examine what makes for an environment conducive to physical activity and what needs to be done if we are to promote activity to adolescent girls in this way.
This study has limitations. For example, the interviews were added on to an existing study, meaning that in-depth data could not be collected as the study progressed. In this regard the girls were asked to reflect back over the previous two years rather than telling the story as it progressed. A much deeper insight could have been gained by interviewing each participant at each six monthly data point and examining how responses changed over the course of the study. It is acknowledged that by only interviewing participants once, some recollections may be hazy or clouded by the participants’ experiences during the course of adolescence, or by their opinions held by the end of the study.

A further limitation is that only six participants were interviewed. However, it is not intended that these case studies provide a comprehensive solution to the problem of low and declining physical activity in adolescent girls. Instead, the in-depth analysis is designed to provide a more detailed insight into a subset of issues that may relate to physical activity for some girls. The complex nature of society and individual differences within it means that physical activity participation is always going to be multi-faceted in its nature, and to provide clear and ‘proven’ solutions is not possible at this stage. However, by providing examples of how participation could be enhanced or constrained for adolescent girls with similar characteristics to those studied here, our knowledge is enhanced. The girls in this study are likely to be quite representative of many adolescent girls in today’s society. Future qualitative research might examine, for example, issues related to participation among girls representative of an urban inner city area where the environment is considered less safe, or how the philosophies of certain religious or ethnic minorities impact on opportunities to be physically active.
Chapter 6

General discussion, recommendations, and overall conclusions

6.1 Introduction

The purpose of this thesis was to examine factors influencing adolescent girls' physical activity decisions. The rationale for each study was derived from observations of low (Armstrong et al., 1990; Pate et al., 1994) and declining (Armstrong & Welsman, 1997; Pratt et al., 1999) levels of physical activity during girls' teenage years, and a desire to understand more about factors potentially associated with physical activity participation, and how to increase low levels of participation (Sallis et al., 1992). Guided by Sallis and Owen's (1999) behavioural epidemiology framework, four studies were presented that (i) identified factors related to physical activity; (ii) examined the role of social-psychological and physical environmental factors in different physical activity types; and (iii) examined in detail the role of selected social-psychological factors in girls' physical activity decisions. The main findings of each study are summarised in Table 6.1.

The data from the systematic review indicated that many variables are associated with adolescent girls' physical activity but many more remain unstudied. Furthermore, the weak designs associated with much of the current literature mean that existing findings should be interpreted with caution. Nevertheless, the identification in study two of similar social-psychological factors to those identified in study one influencing physical activity participation warranted an investigation of how these factors vary according to activity type in study three, and how they impact on physical activity decisions in study four. The identification that aspects of the physical environment were understudied led to the conclusion that these should be examined in study
### Table 6.1: Summary of the main findings of each study

<table>
<thead>
<tr>
<th>Study</th>
<th>Purpose</th>
<th>Design</th>
<th>Sample</th>
<th>Measures</th>
<th>Analysis</th>
<th>Findings</th>
</tr>
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</table>
| 1     | To identify key correlates of physical activity for adolescent girls    | Systematic literature review  | 60 studies yielding 58 independent samples   | Levels of association                         | Descriptives of levels of association          | Demographic variables were consistently associated with physical activity  
Positive psychology, including personal importance, enjoyment, competence, positive body image, and self-efficacy, related to higher physical activity levels  
Family support was consistently associated with physical activity, but inconsistent findings for other variables relating to family and peers  
Physical activity levels were higher for girls involved in organised sport  
Only two behavioural variables were studied three or more times: consistent negative relationship for smoking, indeterminate relationship for TV viewing |
| 2     | To identify factors influencing adolescent girls' physical activity decisions | Qualitative interviews        | 8 focus groups with a total of 47 girls aged 14-16 years | Verbatim transcripts of focus group discussions | Inductive analysis using a constant comparison approach | Aspects relating to a teenage culture interfered with participation, including: acceptance of feminine stereotypes, self-presentation, changing priorities away from physical activity, boys' behaviour during physical activity, and a desired structure of activity (to be fun, with friends, and not overly strenuous) to make it appealing to girls  
Other aspects seen to influence decisions were enjoyment, the role of parents and teachers, and the benefits/barriers balance |
| 3     | To understand how social-psychological and physical environmental factors relate to sport, exercise, and active | Cross-sectional survey        | n=352 age 11-16 years                      | Modified Self-Administered Physical Activity Checklist (SAPAC) Social-psychological and physical environmental | Descriptives Exploratory factor analysis of social-psychological variables Multiple regression analysis for each of sport, exercise, and | Walking for transport was the most popular activity  
Participation in sport was predicted by father's participation, positive importance, and availability of home equipment  
Exercise participation was predicted by social support, father's participation, and facilities available in the neighbourhood  
No one social-psychological or physical |
<table>
<thead>
<tr>
<th>Study</th>
<th>Purpose</th>
<th>Design</th>
<th>Sample</th>
<th>Measures</th>
<th>Analysis</th>
<th>Findings</th>
</tr>
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<tr>
<td>4</td>
<td>To develop a greater understanding of how and why certain social-psychological factors influence on physical activity participation</td>
<td>Case studies</td>
<td>6 girls age 10-15 at outset of study, 12-17 at time of interview</td>
<td>Free time behaviour diary, Body composition, Body attractiveness from the Children's Physical Self-Perception Profile, Importance of having a good looking body from the Children's Perceived Importance Profile, Parental Questionnaire, Semi-structured interviews</td>
<td>Deductive analysis of data into closed pre-determined categories. Analysis performed individually and findings compared across all participants.</td>
<td>Activity did not decline across the two year study period, nor were older girls less active than younger girls. Appearance-related concerns were associated with actual body size. Those with greater appearance related concerns did not like to be active in public, especially in front of boys, or to wear revealing attire. Younger girls viewed exercise more as fun whereas older girls saw it as a way of achieving a certain appearance. Parental support was more important than parental role modelling. The influence of friends changed with age: physical activity was largely with friends at a younger age, during the mid-teenage years pressure increased to do other activities, at the end of adolescence decisions were made largely independent of friends.</td>
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three. The contribution of this thesis to knowledge in relation to these social-psychological and physical environmental factors is now discussed.

6.2 General discussion

The previously accepted finding was that being older was associated with lower levels of physical activity (Biddle et al., 2004) but studies three and four provided some evidence that this may not always be the case. Studies two, three and four, however, lent evidence to a hypothesis that motivations for and requirements of physical activity change as girls progress through their teenage years. If particular requirements are not met then participation may decline or cease altogether. Age group specific targeting would, therefore, seem to be necessary.

Findings relating to other variables lend weight to the theory of changing motivations. For instance, whereas enjoyment was identified as being related to physical activity participation across all four studies, study four showed how the role of enjoyment changed with age. Whereas younger girls reported participating simply because they enjoyed an activity, for the older girls participation was more bound up in issues related to appearance and weight control. Not only was enjoyment no longer the predominant motivating factor, but the sense of duty brought on by these weight management issues could serve to undermine enjoyment, and hence threaten continued participation.

Findings relating to self-presentational concerns were mixed: whereas body image and weight concerns were found to be consistently associated with physical activity in study one, and self-presentational concerns were identified by the participants in study two as impacting on their physical activity decisions, self-presentational concerns were not related to participation in any of the activity types in study three. Further available evidence from study four, however, suggests that although self-presentational concerns become more of a motivating factor for physical activity as girls increase in age, they do exist across the whole adolescent age span, and tend to be related to actual body size. Furthermore, whilst appearance concerns may motivate some girls to be active, in others they serve to hinder activity. This complex role of self-presentational issues in physical activity participation
helps to explain the mixed findings in studies one to three, and also demonstrates the useful purpose of in-depth research, such as that carried out in study four, in identifying how and why certain factors can influence physical activity decisions.

The association between reported body concerns and actual body size lends weight to an argument that a culture of being slim is central to the lives of adolescent girls. Indeed, participants in Biscomb et al.'s (2000) study identified that physical activity could be made more appealing to adolescent girls by emphasising the positive effects it could have on their physique and how this could make them more attractive to the opposite sex. These girls felt that if the calorie burning effects of exercise were promoted then more teenage girls might become interested in being active as a means to achieving a desired shape. Evidence also suggests that for many adolescent girls it is so important to be slim that the main or only reason to be active is to achieve this goal. This was certainly the case for participants in Shaw and Kemeny's (1989) study, who also felt that it was more important to look fit than to actually be fit. One girl in this study said: “Girls feel being slim is more important than being physically fit; they just want to be attractive, not actually healthy....Most girls just starve, not exercise, to lose weight.”

Whilst this demonstrates the culture and context within which many adolescent girls operate, and whilst some may feel that it would be beneficial to promote physical activity to adolescent girls through a promise of an improved physique, promoting physical activity in this manner could prove to be very controversial and dangerous, as well as ineffective. As Shaw and Kemeny (1989) point out, the increase in self-consciousness associated with adolescence, coupled with increased concern regarding being overweight and resulting declining body images, could well lead to many girls feeling discouraged from being active in environments that they perceive to be full of slim and attractive girls. More seriously, researchers have identified the importance placed by the media and by society in general on physical appearance for females to be one of the main causes of low self-esteem and negative body image (Orbach, 1982; Sherman, 1976), and the desire for thinness among adolescent girls and young women has been closely linked with eating disorders such as anorexia nervosa and bulimia (Grant & Fodor, 1986; Lundholm & Littrell, 1986; Orbach, 1982). How to de-emphasise the importance of appearance in today's society is a difficult matter; as
Sweeting (1994) points out, "all we need is a root-and-branch educational overhaul and a complete rewriting of our cultural expectations about size, shape and appearance. The return of the woolly mammoth looks more likely" (pp. 2-3).

Promotion of physical activity through an emphasis on the associated health benefits may also prove to be futile: although an association was found in study two for a belief in the importance and benefits of being physically active, qualitative evidence from both studies two and four indicates that health benefits are not generally considered by adolescent girls when they are making their physical activity decisions. According to Piaget (1952), children do not develop adult-like capacity for abstract thought and reasoning until age 11-14. Welk (1999) believes that this explains children's inability to delay gratification in pursuit of some future, less tangible benefit, like health or fitness.

Findings in relation to other factors indicate more promising avenues for promotion of physical activity. For example, the significance of the personal importance attached to being physically active was consistently demonstrated across all four studies. Examination of the role of the decisional balance in relation to benefits and barriers in both qualitative studies also revealed that those who rated the importance and benefits to themselves of being physically active as being of greater magnitude than any barriers would continue to prioritise physical activity, even in the face of pressures to do other things. Evaluation of the pros and cons associated with adoption of a new behaviour has been shown to be relevant for understanding behaviour change in relation to physical activity (Marcus, Rakowski, & Rossi, 1992), and is one factor hypothesised to mediate behaviour change in the transtheoretical model of behaviour change (TTM) (Prochaska & DiClemente, 1983). Narrative reviews of the TTM in relation to physical activity have concluded that the pros of change increase across the stages, often peaking in the action stage (Reed, 1999), whilst cons usually decrease with advancing stage. Another key aspect of the TTM is self-efficacy, which has been consistently shown to be positively related with advancing stage (Marcus & Owen, 1992; Marcus, Selby, Niaura, & Rossi, 1992), and which was identified in study one to be positively associated with adolescent girl's physical activity. Interventions based on the TTM have been successful in promoting active living (Dunn, Marcus, Kampert, et al., 1999; Dunn, Garcia, Marcus, et al., 1998; Dunn, Marcus, Kampert, et al., 1997), walking to work.
(Mutrie, Carney, Blamey, et al., 1999), and physical activity to university students (Woods, Mutrie, & Scott, 1999). Interventions aimed at increasing adolescent girls’ physical activity based on the TTM may, therefore, prove to be particularly effective, although it is likely that measures of decisional balance would have to be adapted to be more appropriate to this population.

A commonly held view is that whilst parents are more influential for determining young children’s attitudes towards and participation in physical activity, peers are generally more influential for adolescents (Godin & Shephard, 1986; Sallis, 1994). The evidence from this thesis indicates that the picture may not be so clear: although limited support was found for a relationship between parents’ and daughter’s activity, the findings from both the literature review and the two qualitative studies indicated the positive influence that parental support and encouragement can have on a girl’s physical activity participation throughout her teenage years. Many of the girls in studies two and four who had remained active throughout adolescence spoke warmly of the positive contributions of their parents, be it through paying for activities, driving them to events, or simply ensuring that their daughters did not sit around the house and become lazy. It would seem that parents wishing their daughters to be active would be advised to do so more through physical and emotional support than by direct role modelling. The implication of this finding is that potential exists to increase adolescent girls’ physical activity levels through targeting of both parents and daughters. Indeed, as Crockett (1987) points out, parental support is often necessary to enable children to implement behaviour changes, and efforts to promote positive behaviour changes may be more effective if they are aimed at the attitudes and habits of the family as a whole rather than those of individual persons. Further support for the value of targeting both parents and daughters comes from Timperio, Salmon, & Ball (2004), who reviewed intervention studies among children, adolescents, and young adults, and found interventions involving contact with families to generally be the most effective. Attempts to educate parents on the importance of establishing a physically active lifestyle in youth should indicate ways in which the parents can help. Although it is not feasible to expect that all parents have the means to fund their children or drive them places, verbal encouragement and support for interests is free, and the importance of this type of encouragement should be emphasised.
Turning to the influence of friends, the picture remains unclear: whilst the review of the literature found peer support to be inconsistently related to physical activity participation, and whilst social support was only related to exercise participation in study three, participants in study two reported activity being more fun if friends were involved and feeling insecure without their friends. Findings in study four were mixed, with the role of friends apparently changing and decreasing in importance across the teenage years. This rather hazy overall picture indicates that further research in this area is warranted. This view is shared by (Smith, 2003), who argues that peers can contribute to self-perceptions, moral attitudes and behaviours, affect, and motivation.

Findings from study four suggested that similar attitudes toward physical activity may well exist across friendship groups, and that those in active groups may find it easier to be active themselves. In terms of promoting physical activity, therefore, attempts should be made to target groups rather than individuals. An obvious way to do this is through the school, and Watson, Poczwardowski, & Eisenman (2000) demonstrate a simple yet effective manner in which such an intervention can be run. After promotional school assemblies, in which local representatives of the Women's National Basketball Association spoke of the benefits of physical activity, an after-school physical activity program was offered, involving a variety of fun and cooperative activities. Participants also received monthly newsletters containing a variety of information and encouraging material. Focus groups with the participants after completion of the program identified certain features that had facilitated continued participation. These included the convenient time and location of the program, the fact that it was free, the fun and non-competitive atmosphere, and the opportunity to participate as a group. This study did not measure objectively changes in physical activity levels but many of the participants reported feeling more positive about and devoting more thought to physical activity after the program. Another key aspect of this program was that promotion was continuous through highly visible advertising and clear communication of the program content. Such promotion may have led to groups of friends paying more attention to physical activity than usual and considering it in a new and positive manner.

Other findings in relation to organised sport and aspects of the physical environment indicate an area for fruitful new research and potentially useful interventions. Organised sport was
found to be consistently associated with physical activity participation in study one, and participants in study four reported feeling frustrated over the lack of opportunities available to them, indicating that a greater availability of organised activities might lead to increased participation for many girls. As indicated in chapter two, involvement in organised sport has been found to account for gender differences in overall physical activity in Iceland (Vilhjalmsson & Kristjansdottir, 2003) and in a comparative study between Glasgow and New Zealand (West et al., 2002), with the authors of the former study suggesting that promoters of physical activity should consider ways in which organised sports can accommodate the needs and interests of girls and women.

In terms of the physical environment, evidence from study three indicated that availability of home equipment contributed to sport participation, whilst availability of neighbourhood facilities contributed to exercise participation. Although data on aspects of the physical environment as they relate to youth physical activity are sparse, recent research among Dutch adults has found proximity to sports facilities and neighbourhood safety to be associated with participation in sports activities (van Lenthe, Brug, & Mackenbach, 2005). Many of the activities favoured by the girls in study three were those that would rely on a safe environment (e.g. walking, jogging, cycling) or availability of suitable facilities (e.g. badminton, aerobics, swimming). It is easy to see how perceptions of a suitable neighbourhood and appropriate facilities can contribute to physical activity participation. One hypothesis arising from study three, however, was that parents' perceptions of the environment may be more influential than their daughters' views.

One recent study to consider environmental factors in relation to youth physical activity has examined the role of barriers in low-income neighbourhoods (Romero, 2005). Findings here indicated that a perception of low quality facilities and an inability to pay facility fees were both barriers to participation in more frequent physical activity. The perception of safe local facilities with suitable adults present was associated with a higher frequency of physical activity among youth. This study did not report findings separately by gender, however, and only examined the associations of the environmental variables with vigorous physical activity. Given that parental constraints to where children can go, who with, and when they have to return have been reported elsewhere to be greater for girls than for boys (Coakley &
White, 1992), and given that the evidence from chapter three suggests a preference among girls for moderate physical activities, examination of adolescent girls' and their parents' perceptions of safety and quality of facilities as they relate to a broader span of sports and physical activity would seem warranted.

Evidence for gender differences in the role of perceptions of safety comes from Suminski, Carlos Poston, Petosa, et al. (2005), who studied walking behaviour among U.S. adults. Suminski et al. found that women in safer neighbourhoods were over four times more likely to walk for exercise or walk their dogs in their neighbourhood than women in less safe neighbourhoods. No differences in walking behaviour relating to neighbourhood safety were found for males. The authors concluded that prospective studies were necessary to determine if changes in neighbourhood safety would promote increases in walking by women. They also recommended that health practitioners attempt to identify other modifiable environmental characteristics affecting physical activity and plan health promotion strategies accordingly.

In conclusion on the physical environment, it would seem sensible to recommend that future research examine adolescent girls' and their parents' requirements of their local facilities and aspects they consider to contribute to a safe neighbourhood. Questions should also be asked regarding how we can improve on current facilities and neighbourhood areas to make them more appealing to adolescent girls, and what contributes to a facility or area that is widely used and enjoyed. Seeking youngsters' opinions in this manner is in keeping with MacPhail, Kirk and Eley's (2003) assertion that too seldom have young people been asked to provide advice on what can be done to facilitate their participation in sport. An exploratory qualitative approach would seem to be appropriate initially and indeed, there is general support in sport development for the use of qualitative approaches to address inequality in sport (Hylton & Totten, 2001). Future research must also continue the trend set in this thesis of being specific to different activity types so that we can understand fully its role in participation in each of the activity types.
6.3 Recommendations for future research and practice

The evidence from this thesis suggests that explanations for adolescent girls' physical activity behaviour are complex and wide ranging and cannot be attributed to a simple set of variables. Future research and interventions should target changes across personal, social, and physical environmental factors to achieve substantial behaviour change (Baranowski, Anderson, & Carmack, 1998). Nonetheless, certain recommendations for future work arise and these are presented below:

6.3.1 Recommendations for researchers

- Identify how adolescent girls' physical activity needs differ according to age group;
- Further investigate those variables found to have an inconsistent relationship with physical activity;
- Investigate ways in which appearance-related concerns can be overcome to enable greater participation among more self-conscious girls;
- Examine current perceptions of gender-appropriate activities and the extent to which stereotypes remain;
- Identify the usefulness of the transtheoretical model of behaviour change in predicting adolescent girls' physical activity behaviours;
- Examine longitudinally how motivation for sport and physical activity changes throughout adolescence;
- Investigate further the role of parents and peers in adolescent girls' physical activity, and how this role changes across the teenage years, taking account of both significant others' participation and support;
- Identify adolescent girls' requirements of their physical environment; consider such issues as safety, and availability and appropriateness of local facilities;
- Investigate the role of the physical environment in different types of sports and physical activities;
- Investigate further the changing role of the physical environment across the teenage years, ideally using longitudinal designs.
6.3.2 Recommendations for promoters, practitioners, and providers

- Listen to adolescent girls' opinions; make popular activities as available as possible; provide opportunities to try new activities that may not have been previously available to females;
- Promote physical activity in an age-specific manner;
- Ensure that physical activity environments are enjoyable and emphasise self-improvement, choice, and perceptions of competence and confidence;
- De-emphasise the importance of appearance; promote activity as fun and enjoyable within its own right, and accessible to girls of all shapes and sizes;
- Provide educational information for whole families, encourage parents to support and motivate their daughters as much as possible, especially during the early years;
- Promote physical activity as sociable in its own right, aiming to create environments in which girls can participate alone if necessary and form new friendships;
- Develop female-specific after-school programs; emphasise a fun, non-competitive atmosphere, a low skills pre-requisite, and participation with friends;
- In situations where both genders are present ensure that the environment is one of minimal tolerance of boys' bad behaviour
- Improve local facilities to make them more appealing to adolescent girls, provide adult supervision, designate open spaces for female-specific activities;
- Concentrate on improving neighbourhood safety; provide clean, well lit areas;
- Provide appropriate organised sport activities for those requiring them;
- Suggest routes for local walks that girls can enjoy after school and at the weekend; ensure that these routes are safe and that winter alternatives are available.

6.4 Overall conclusions

Regular participation in physical activity is now widely acknowledged to contribute to well-being. The problem of low participation among adolescent girls, however, remains a topic of concern, and attempts to improve this situation have been largely unsuccessful. The findings of this thesis indicate that although many adolescents report continuing to enjoy physical activity, participation can be sporadic and affected by a complex set of barriers, and
motivations for physical activity change across the teenage years. Indications are that aspects of the physical environment play a significant role in adolescent girls' participation, and yet this area remains largely unexplored. As well as promoting physical activity to age-specific groups of girls, therefore, a multi-level approach is recommended to future research and practice, incorporating environmental, social, and individual factors.
References


Bauer, K. W., Yang, Y. W., & Austin, S. B. (2004). "How can we stay healthy when you're throwing all of this in front of us?" Findings from focus groups and interviews in middle schools on environmental influences on nutrition and physical activity. Health Education & Behavior, 31(1), 34-46.


Mulvihill, C., Rivers, K., & Aggleton, P. (2000). *Physical activity 'at our time': Qualitative research among young people aged 5 to 15 years and parents*. London: Health Education Authority.


Appendix A: Summary details of systematic literature review studies
<table>
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<tr>
<th>Study &amp; journal</th>
<th>Sample characteristics</th>
<th>What did it measure?</th>
<th>Method / design and measures</th>
<th>Results</th>
<th>Key points / critique</th>
</tr>
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<tr>
<td>Aamio et al (2002) British Journal of Sports Medicine</td>
<td>N=4906, 2254 boys &amp; 2652 girls. Finnish twins. Age 16 at the start of the study.</td>
<td>Health related behaviour, social relationships, and health status at the age of 16 in relation to persistence of physical activity and inactivity during the following two and a half years.</td>
<td>Longitudinal. Questionnaires sent at age 16, 17 &amp; six months after their 18th birthdays. Questionnaires measured: LTPA: frequency of LTPA outside school, subjects' own perception of their physical fitness, intensity of physical activity (only asked at baseline); respondents classed as persistent exercisers or persistently inactive based on their answers Health related behaviours: smoking habits, alcohol consumption, use of dietary fats, breakfast eating habits Social relationships: kind of school, school grade compared with class average, SES of parents Health status: own perception of current health, self report of various symptoms, BMI</td>
<td>1. 20.4% of boys and 13.0% of girls were persistent exercisers, 6.6% of boys and 5.3% of girls were persistently inactive 2. Among the girls who considered their fitness to be very good at age 16, 39.7% were persistent exercisers and 1.6% were persistently inactive 3. Intensity of physical activity at the age of 16 correlated with persistent exercising: 31.5% of the girls who breathed and sweated heavily during exercise were persistent exercisers while on 3.9% were persistently inactive. 4. Variables showing significant associations with persistent activity among the girls were non-smoking, regular breakfast eating habits, non-use of spreads on bread, attending a gym (type of school in Finland), and good perceived current health 5. Significant associations with persistent inactivity were found for smoking, poor perceived current health, and attending vocational school.</td>
<td>Strength of the study is that the questionnair e was completed three times. Number of subjects and response rate were also high.</td>
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<tr>
<td>Allison et al (1999) Preventive Medicine</td>
<td>N=1041. .688 grade 9 &amp; 353 grade 11 in Toronto. 51% male, 49% female. Mean age 14.9</td>
<td>The relationship between perceived barriers and participation in vigorous PA</td>
<td>Cross-sectional. Questionnaire measured: Perceived barriers: 16 items asking the importance of each item in preventing you from participating in vigorous PA* Self-efficacy: 20 item scale created for the study</td>
<td>1. Females had higher levels than males on 8 of 9 perceived barriers: lack of time due to school work, lack of time due to other interests, mood, lack of time due to family activities, lack of energy, lack of self-discipline, self-consciousness, stress 2. Older and female students less likely to participate in PA 3. Self-efficacy despite perceived barriers was found to be a more consistent predictor of vigorous PA than perceived barriers themselves</td>
<td>Measurem e did not include moderate intensity activity</td>
</tr>
<tr>
<td>Allison et al (1999) Health Education &amp; Behavior</td>
<td>N=1041. 688 grade 9 &amp; 353 grade 11 in Toronto</td>
<td>The relationship between physical activity self-efficacy and participation in vigorous physical activity</td>
<td>Cross-sectional. Questionnaires: Self-efficacy: 20 item scale in relation to overcoming perceived internal and external barriers adapted from previously validated measures Perceived barriers: 16 factors adapted from those used in Campbell's Study of Wellbeing (1990) Actual barriers: 15 item measure of life strain adapted from an earlier study of stress, coping and drug use. Also assessed lack of time as an actual barrier</td>
<td>1. Females participated less than males, especially in other school and outside of school activities 2. Gender predicted self-efficacy regarding internal barriers suggesting gender and self-efficacy interact in some settings to influence participation</td>
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<tr>
<td>Berkey et al (2000) Pediatrics</td>
<td>N=10769, 6149 girls n 4620 boys. Aged 9-14. Predominantly white. US.</td>
<td>Associations among physical activity, gym class participation, recreational</td>
<td>Prospective longitudinal study. Measured: Adiposity: BMI. Annual change in adiposity measured by 1 year change in BMI Dietary intake: self-administered, semi-quantitative food frequency questionnaire (FFQ)</td>
<td>1. Annual BMI increases were higher in girls fewer hours of activity during the year between the two BMI measurements 2. A larger increase in caloric intake was associated with a larger increase in BMI</td>
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<td>Study (Year)</td>
<td>Participants</td>
<td>Methodology/Findings</td>
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<tr>
<td>Biddle &amp; Armstrong (1992) Social Science &amp; Medicine</td>
<td>N=72. 35 girls and 37 boys aged 11-12. City in the south west of England</td>
<td>The relation of activity levels to motivation and self-perceptions. Heart rate monitoring for 12 hours on 3 school days. Psychological inventories assessed PSPs and motivation. Motivation: Motivation Orientation in Sport Scale (MOSS, Weiss et al, 1986) PSP: PSPP-C (Whitehead &amp; Corbin, 1988) 1. Boys spend greater time over 159bpm than girls. No difference at 139bpm. 2. Boys activity correlated with intrinsic motivation for PE and sports, mainly due to the intrinsic mastery motivation variable. 3. More active girls tended to be more motivated by easy skills than challenging tasks and were more dependent on the teacher's opinion. 4. Active girls had higher scores on attractive body, physical self-worth and global self-esteem of the PSPP than less active girls.</td>
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<td>Biddle &amp; Wang (2003) Journal of Adolescence</td>
<td>N=516. Girls aged 11-16 from all areas of England</td>
<td>The motivation and self-perception profiles of secondary school girls in physical education and the relations of these profiles to physical activity. Cross-sectional. Questionnaires measured: Achievement goal orientations: TEOSQ Sport ability beliefs: CNAQ-2 Relative autonomy index: Perceived Locus of Causality Scale Amotivation: Three items from the Academic Motivation Scale Physical self-perceptions: PSPP-C Perceived importance: PIP Physical activity participation: 7 day recall questionnaire devised by Sallis &amp; Saelens (2000) 1. Five clusters were identified: Moderate motivation and physical self, Very low motivation and low physical self, Amotivated, High motivation and physical self, and Moderate motivation and high physical self 2. Girls higher in motivation and physical self were higher in physical activity, although differences between clusters on physical activity were quite small.</td>
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<td>Bungum and Vincent (1997) American Journal of Preventive Medicine</td>
<td>N=852. 626 African American and 226 Caucasian girls in rural South Carolina. Aged 14-18 yrs</td>
<td>Associations of 25 variables with current PA. Measured by ethnic group then ethnic group and age. Cross-sectional. Questionnaire measured 25 variables classed as physiological, psychological, social, environmental and demographic. Also measured exercise related knowledge, usual grades in academic courses, TV viewing, SES, smoking, height, weight, and PA. PA: Variation of Stanford PA Recall asking for recall of moderate, hard or very hard activity over previous seven days Cognitive factors: self-efficacy, attitudes toward 1. African-American girls: participation in organised sports, age (-), sports media (+), nurture from biological father, and friend accounted for largest percentages of variance in PA. For those age 14-15, participation in organised sports and self-efficacy were predictors of PA. For those 16-18 yrs participation in organised sports, nurture from biological father, enjoyment of vigorous Pas, friends' support, and perceiving health benefits were associated with PA behaviour 2. Only predictor for Caucasian girls was attitudes.</td>
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<td>Study</td>
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<tr>
<td>Bungum et al (1999) American Journal of Health Behavior</td>
<td>N=852. 626 African American girls and 226 Caucasian girls in rural South Carolina. Aged 14-18 yrs</td>
<td>Determinants of participation in moderately and vigorously intense PA among African-American and Caucasian adolescent females</td>
<td>Cross-sectional. Questionnaire measured 25 variables classified as cognitive, social, environmental and demographic. Also measured exercise-related knowledge, usual grades in academic courses, TV viewing, SES, smoking, height, weight, and PA. Cognitive factors: self-efficacy, attitudes toward exercise, knowledge, normative beliefs, anticipated health benefits, barriers, intention, educational aspirations</td>
<td>1. 6% and 13% of Caucasian and African-Americans reported engaging in no physical activity 2. Among Caucasian females participation in organised sports and self-efficacy were associated with moderate PA. Among African-Americans it was participation in organised sports, self-efficacy, family support and enjoying activities that made one sweat. 3. Among Caucasians barriers and self-efficacy predicted vigorous PA. Among African-Americans it was just organised sport participation</td>
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<tr>
<td>Bungum et al (2000) Pediatric Exercise Science</td>
<td>N=520. 8th-12th grade in South Carolina</td>
<td>Associations between psychosocial factors and MVPA and VPA, in youth and by gender</td>
<td>Cross-sectional. Determinants of physical activity selected based on social cognitive theory and TRA. Also measured PA.: Determinants: Beliefs and values, attitudes, enjoyment, self-efficacy, subjective norms, intentions. Scale designed for this study, based on several others' scales and recommendations. PA: PDPAR for 1 day</td>
<td>1. Key finding that self-efficacy associated with activity in both males and females. 2. Enjoyment was associated with intention in both sexes and with VPA in males 3. Attitudes predicted MVPA in males but not in females, but females' attitudes toward PA were more favourable than males. 4. Males more active than females at both MVPA and VPA 5. Relationship between subjective norms and PA in females 6. Males reported greater intentions 7. No gender difference for most of the variables</td>
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<tr>
<td>Carroll &amp; Loumidis (2001) European PE Review</td>
<td>N=922, 468 boys, 454 girls, 10-11 year olds. North West England (32 schools within one education authority)</td>
<td>Perceived competence and enjoyment of physical education and physical activity. Activity levels of previous week.</td>
<td>Cross-sectional. Questionnaires measured: Self-Perceived Competence: Pre-Adolescent Attitudes Towards Physical Education Questionnaire (PAAPEQ) used 4 point Likert scale. Levels of Enjoyment of PE &amp; PA: Self-Perceived Competence in Physical Education Scale using 4 point Likert scale (SPCES) Physical Activity: Weekly Activity Checklist, 7 day recall (Sallis et al, 1993) Classified into 3 groups according to activity level (high, low, none)</td>
<td>1. Boys considerably more active than girls. 2. Less than 1/3 children participate in recommended level of PA for health. 3. Ability judgments relate to enjoyment of that activity. 4. Those with higher perceived competence spent more time participating in team sports traditionally taught in national curriculum. Did not take account of any sports other than those taught within the national curriculum and within this particular education authority.</td>
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<td>Craig et al (1996) Preventive Medicine</td>
<td>N=310. 5th and 8th graders in Cambridge, Massachusetts. 53%</td>
<td>Evaluation of correlates of vigorous activity and determination of</td>
<td>Cross-sectional. Questionnaires studied the extent to which PBC predicted intention to participate in vigorous activity Questionnaire developed for this study:</td>
<td>1. PBC and attitude predicted intention to participate and perceived competency predicted PBC 2. 8th grade girls scored lower than 8th grade boys on intent, PBC, perception of competence and hours of VA.</td>
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<tr>
<td>Study</td>
<td>Sample Characteristics</td>
<td>Research Design</td>
<td>Measures</td>
<td>Findings</td>
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<td>Crocker et al (2000)</td>
<td>220 boys age 11.7 +/- 1.3yrs and 246 girls age 11.7 +/- 1.2 yrs. Canada</td>
<td>Cross-sectional. Questionnaires measured physical activity and self-perceptions: PA: Physical Activity Questionnaire for Older Children (PAQ-C) – measures moderate to vigorous activity over previous 7 days Self-perceptions: PSPP</td>
<td>- Boys were more physically active and had more positive perceptions of strength, sport skills and physical self-worth than girls - Relationship between physical activity and physical self-perception was similar in both boys and girls - There were differences between the sexes in reported frequency for specific activities - All PSPP scales were significantly correlated with physical activity in both boys and girls</td>
<td>- The relationship between physical self-perceptions and physical activity in Canadian schoolchildren was examined. - Participation in vigorous activity: self-report for previous year</td>
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<td>Deflandre et al (2001b)</td>
<td>N=80. 36 boys and 44 girls aged 11-16yrs. France, middle SES</td>
<td>Influence of morphological, biological, sociological, psychological and environmental factors on the practice of organised sports and the amount of moderate to vigorous physical activity</td>
<td>- Sport practicing girls had mothers who were sig more involved in sport than the mothers of non-sport practicing girls. No difference observed for time spent on moderate to vigorous activities. - Active boys had fathers who were more involved in sport than fathers of inactive boys. - Sport practicing girls had higher achievement motivation than non-sport practicing girls. - No correlation between moderate to vigorous physical activity and organised sports.</td>
<td>- Physical and sport activities by self-report. HR monitoring for time spent on moderate to vigorous PA. Questionnaire measured sport involvement of family and friends, adolescents' motivation, their material environment. Motivation measures adapted from those of Gill et al (1983).</td>
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<td>Deflandre et al (2001a)</td>
<td>26 boys and 22 girls aged 16-19yrs on the French Riviera. Middle SES</td>
<td>Links between morphological, biological, sociological, psychological and environmental characteristics, the practice of organised sports, and moderate to vigorous physical activities</td>
<td>- Physical and sports activities of girls were linked with maximal oxygen uptake, sport involvement of father, support, encouragements of practice, perception of own activity, and private environment (-). These findings did not apply to moderate to vigorous physical activity. - For boys the only links were with sport involvement of friends and perception of own activity. Again no link with moderate to vigorous PA. - Physical and sport activities among girls seemed more strongly linked to sociological characteristics than other ones. This wasn't the case for boys</td>
<td>- Cross-sectional. Physical and sport activities assessed by self-report. Time on moderate to vigorous PA assessed by heart rate monitoring. Questionnaire measured sport involvement of family and friends, support and encouragement received from significant others, teenager's motivations and perceptions concerning their physical and sport activities, physical environment. All measures either constructed for this survey or adapted from those of Gill et al (1983) (motivation)</td>
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<td>Douthitt</td>
<td>N=132. 94 males</td>
<td>Psychological</td>
<td>Correlational design – the IVs were examined for</td>
<td>In the classroom setting:</td>
<td>- Very small sample size.</td>
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<tr>
<td>Study</td>
<td>Sample Information</td>
<td>Methodology</td>
<td>Results/Findings</td>
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| (1994) Adolescence | and 33 females in 9th, 10th and 11th grade in Denver, Colorado. 110 of these were available for the 2nd phase of data collection | determinants of exercise adherence that school PE programmes could have an impact on, particularly according to gender and level of exercise competitiveness | their predictive value for the DV of exercise adherence. 2 phases – phase 1 in a structured PE classroom setting, phase 2 in a summer vacation exercise setting. Questionnaires measured exercise adherence and psychological variables of self motivation, perceived control, personality/ sport congruence and perceived self competence.
Exercise adherence: Sport Index of the Habitual Physical Activity Questionnaire (Baecke, Burema & Frijters, 1982)
Psychological variables: ? |
Anti-social activities: alcohol use, cigarette smoking, marijuana use, hitting other students, lying about age, acting in an unruly manner, stealing.
Pro-social activities: physical activity, volunteer activities, religious activities, involvement in organized sports activities, involvement in organized non-sports activities.
Demographics: parental marital status, household income | 1. Perceived athletic competency inversely predicted exercise adherence for females, suggesting that girls sought to improve their competency perceptions through increased activity.
2. For males perceived romantic appeal was inversely significant.
In the unstructured setting:
1. No variables had significant predictive value in males
2. In females perceived global self-worth and perceived physical appearance collectively accounted for 32% of the variance in exercise adherence.
Conclusion that there is a link between some domains of perceived self-competency and exercise adherence. |
| Eisenmann et al (2002) Obesity Research | 15,143 boys and girls aged 14-18 yrs in the US. Racial groups were whites, African Americans, Hispanics and Other. | The prevalence of participation in moderate and vigorous PA and TV viewing. The associations between PA, TV watching and weight status in 14-18yr old US youth. | Cross-sectional: Measured:
Physical activity: one question about MPA and one about VPA, both recall of the past 7 days
Inactivity: One question concerned with hours of TV watched in an average school day
Weight status: BMI from self-reported height and weight. Overweight defined using age and sex specific ≥85th percentiles of BMI from CDC/National Center for Health Statistics growth charts |
| Fairdough (2003) | N=73, 33 girls from state high schools in | The association between students’ Physical activity: heart rate telemeters Psychological measures: 8 item questionnaire | 1. Perceived competence and enjoyment were moderately correlated among boys and girls. |

2. Boys were more active than girls, especially for VPA.
3. Prevalence rates were relatively stable across age groups for MPA but decreased for participation in VPA for ≥3 d/wk in girls.
4. White boys and girls reported the highest rates of participation in MPA and VPA ≥3 d/wk; African American and Hispanic girls reported the lowest rates of participation in MPA and VPA ≥3 d/wk.
5. In girls BMI was significantly different between the lowest and highest levels of MPA groups. BMI was significantly lower for those girls participating in six to seven bouts of VPA a week.
6. Those who took part in less MPA per week were more likely to watch more TV than those who took part in more MPA. There was no significant relationship between VPA and TV in girls.
7. Conclusion in that increased levels of moderate and vigorous PA are associated with a lower BMI and less TV watching. |
<p>| <strong>European Journal of PE</strong> | Merseyside. Aged 11-14 | level of perceived competence, enjoyment, and health-enhancing physical activity within PE lessons. Differences in these variables between boys and girls who were involved in team games and individual activities. | designed to assess enjoyment and perceived competence. Taken from the IMI. | 2. Girls' PE enjoyment was negatively associated with levels of moderate-to-vigorous physical activity. 3. Boys enjoyed team games more than girls, who mostly enjoyed individual activities. 4. Students in the low MVPA group reported higher levels of enjoyment than their high MVPA peers. |
| <strong>Felton (2002) Journal of School Health</strong> | N=1668. 56% from urban areas. 46% of urban girls and 59% or rural girls black, remainder white. Mean age 13.4yrs | Differences in physical, behavioural, psychosocial, and environmental factors associated with PA among black and white adolescent girls living in rural and urban areas. Also examined the TV viewing habits of the girls. | Cross-sectional. Measured: Height and weight to give BMI Physical activity using the 3 day Physical Activity Recall. TV viewing: number of 30 minute blocks watching TV/playing videos Psychosocial measures: self-efficacy (8 items), attitudes (7 items), subjective norms (8 items), intentions (1 item) Environmental measures: family environment (5 items), physical environment (4 items) Demographics: Age | 5. Black girls were less active than white girls, both for VPA and MVPA. 6. Among black girls, those in rural areas were more vigorously active than those urban areas. Among white girls those in urban areas were more vigorously active than those in rural areas. 7. Black girls watched more TV than white girls and had higher BMIs than white girls |
| <strong>Gordon-Larsen et al (1999) Journal of Pediatrics</strong> | N=13,157, 6,456 males, 6,701 females. Nationally representative school based sample of adolescents in grades 7 to 12 (ages 12-22) in the US | To determine the extent to which physical activity and inactivity patterns vary by ethnicity among subpopulations of US adolescents | Longitudinal, 2 waves of data collected 1 year apart: Anthropometry: height and weight to give BMI. Overweight according to BMI ≥85th and 95th percentiles PA: standard questionnaire methodology to categorise adolescents in high, medium and low activity patterns. Also asked during wave 2 about times per week spent engaged in various activities, each of which was assigned a MET value Physical inactivity: standard 7 day recall questionnaire to categorise adolescents into high, medium and low inactivity patterns. Assessed TV viewing | 1. Both inactivity and PA were considerably higher for males than females. 2. TV viewing and composite inactivity decreased with age for both males and females. 3. Participation in MVPA decreased with age. 4. Ethnic differences in PA were greater for females: much higher levels of moderate to vigorous PA for non-Hispanic white females than minority females: approx half of the non-Hispanic black females and slightly fewer Asian and Hispanic females reported that they engaged in 2 or fewer bouts of MVPA per week. 5. Multinomial logistic regression models showed that non-Hispanic white females were most likely to engage |</p>
<table>
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<tr>
<th>Study</th>
<th>Sample Size</th>
<th>Methodology</th>
<th>Results</th>
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</table>
- **Physical activity**: standard 7 day recall asking for times per week spent in various physical activities
- **Physical inactivity**: standard 7 day recall asking about TV viewing, number of hours and minutes of video viewing and video/computer game use during the past week. Composite inactivity score calculated from hours and minutes spent in all of the above.
- **Socio-demographic and environmental correlates of activity and inactivity**: gender, age, total household income, maternal education, ethnic group, ethnicity/race, ethnicity and sex interaction, generation of residence in US, urban residence, total reported incidents of serious crime per 100,000, use of neighborhood recreation center, number of days in an average week that respondents attend PE classes at school, whether respondent works for pay, region, month of interview |
|                                            |             |                                                                               | 1. Among females a greater percentage of non-Hispanic whites and Asians participated in the highest category of MVPA, whereas the proportion was smaller for non-Hispanic blacks and Hispanics.
2. For females inactivity was higher for non-Hispanic blacks and Hispanics and was lowest for Asians and non-Hispanic whites.
3. Use of a community recreation center had a marked association with likelihood of engaging in moderate to vigorous physical activity. More males used community recreation centers than females.
4. The greater the number of PE sessions a week the greater the likelihood of falling in the highest category of MVPA. More males were enrolled in PE classes than females and they were more likely than females to participate in PE at least once per week.
5. High levels of crime were associated with a decreased likelihood of falling in the highest category of MVPA. There were no age or sex interactions for this variable.
6. There were no major effects of seasonality or region.
7. Higher level of maternal education was associated with increased likelihood of having high levels of MVPA and decreased likelihood of engaging in high levels of inactivity.
8. Higher family income was associated with an increased likelihood of falling in the highest category of MVPA and a decreased likelihood of falling in the highest category of inactivity.
9. Of the environmental determinants, differential effects for sex were seen only for inactivity due to neighborhood crime with females living in high crime areas being at increased likelihood of falling into the highest category of inactivity. |
- **BMI**: Height and weight taken in wave 2 to give BMI.
- **Physical activity**: Standard 7 day recall |
|                                            |             |                                                                               | 1. Overweight prevalence was highest among non-Hispanic black girls, non-Hispanic white boys, and Hispanic boys and girls.
2. Boys spent more time than girls watching TV and... |
<table>
<thead>
<tr>
<th>Research</th>
<th>US adolescents using baseline and 1 year change in activity and inactivity data.</th>
<th>Inactivity: TV viewing, video viewing, and computer/video game use recorded as hours per week over the past week. Other variables: Smoking, family income and education, race and ethnicity.</th>
<th>playing computer and video games, and also had higher increases in TV/video viewing and games than girls. 3. Boys had more bouts of MVPA per week than girls, non-Hispanic black and Hispanic girls being lowest overall in activity. Boys and girls engaged in identical low-intensity PA per week. 4. Generally speaking there was a decrease in weekly MVPA and an increase in low-intensity PA over the one year period. 5. For the girls, odds of overweight were 43% higher for those with high TV/video viewing and 10% lower for those with high MVPA. 6. MVPA was significantly associated with a decreased risk of overweight except among non-Hispanic white girls and Asians. 7. Predicted probability of overweight was higher with higher hour of TV/video viewing. It was also higher among those who engaged in less MVPA as opposed to those who engaged in several bouts per week. 8. The greatest impact of additional hours of TV/video viewing on overweight was for non-Hispanic white girls and Hispanic boys.</th>
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<tr>
<td>Guinn et al (2000) RQES</td>
<td>N=234, 117 girls, mean age 13.4 years. Mexican Americans from Texas The relationship of activity involvement to goal perspectives and self-esteem among Mexican American adolescents</td>
<td>Cross-sectional: Goal perspectives: TEOSQ Self-esteem: Rosenberg Self-Esteem Scale Activity Involvement: Activity index developed by the public health service</td>
<td>1. Mexican American boys were higher in activity involvement than Mexican American girls 2. Activity involvement was significantly related to self-esteem and task orientation but not to ego orientation</td>
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| Public Health                                                                 | depression, consulted with mental health professional about mental health.  
**Enabling: smoking status, frequency of drinking.**  
**Reinforcing: social support, social involvement**  
**Physical activity index:** A measure of energy expenditure values based on caloric output, categorized as active, moderately active or inactive | 3. Females more likely to report greater social support and to be more socially involved than males.  
4. The reinforcing effects of social involvement decreased with age for both genders.  
5. For both genders physical activity increased with household income, school attendance, and social involvement, and decreased with concern about weight and with increased smoking. Alcohol consumption was also positively related to physical activity.  
6. Physical activity also decreased with age.  
7. Absence of depression was the significant predisposing factor influencing physical activity among females. |
|---|---|
**Cross-sectional. Measured:**  
2. Exercise motives: EM12 (Markland & Ingledeew, 1997).  
3. Perceived and ideal body size: 7 point figure rating scale.  
4. height and weight. | 1. There was no association between gender and exercise level  
2. For females there was no relationship between BMI and exercise level |
**Assessed leisure time Internet use and its relationship to physical fitness**  
1. A 7day Physical Activity Recall  
2. 11 item internet use questionnaire  
3. AAHPERD Youth Fitness tests (cardiorespiratory fitness, speed, ability to change directions, abdominal muscle strength and muscle power of arms and shoulder girdle)  
4. BMI  
5. Body fat measure | 1. no correlation found between fitness test scores and Internet use, leisure time physical activity and BMI  
2. no correlation between Internet use and physical activity  
3. no correlation between physical activity and variables of TRA  
4. moderate to high correlations between Attitude to Exercise and Subjective norm with Intention to Exercise |
**To examine the longitudinal changes in physical activity in large biracial cohort of adolescent girls and racial differences and other factors associated with these changes**  
**HAQ validated questionnaire**  
SES  
BMI  
Pregnancy  
Smoking  
School drop out rates | 1. Substantial declines in PA occur during adolescence in girls and are greater in black than in white girls  
2. Lower levels of parental education were associated with greater decline in activity for white girls at both ages, for black girls this was only seen in the older age group.  
3. Pregnancy was associated with decline in activity among black girls but not among white girls  
4. Smoking was associated with a decline in activity among white girls  
5. Higher BMI was associated with greater decline in activity among girls of both races  
6. Concluded that some determinants of decline, such as higher BMI, pregnancy and smoking, may be modifiable. |
<p>| Lashears et al | N=1343, 687 boys and 656 girls. | 1. To update the descriptive data on Physical activity: One question asking about free | 1. Percentage of boys was higher than that of girls in all categories. Probability of being active was 2.6 times No other analysis by |</p>
<table>
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<tr>
<th>Year</th>
<th>Study Title</th>
<th>Study Details</th>
<th>Findings</th>
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<tr>
<td>2001</td>
<td>Preventive Medicine</td>
<td>Spanish children aged 6-15yrs LTPA among 6-15yrs old. 2. To investigate factors associated with levels of PA in this population 3. To identify aspects that could contribute to improving the development of PA recommendations addressed to this group</td>
<td>1. Higher levels of television viewing and vigorous exercise among children from single parent homes 2. lower habitual physical activity among girls 3. less PA exercise among African Americans and children from single parent homes; higher sports team participation among older yet physically immature children and higher physical fitness among boys, Caucasians, physically mature children and children from single parent homes</td>
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<tr>
<td>1999</td>
<td>Lindquist et al (1999) Preventive Medicine</td>
<td>N=107 (age 6.5 to 13, mean = 10 years) participating in a longitudinal study of childhood obesity in Birmingham, Alabama</td>
<td>1. Higher levels of television viewing and vigorous exercise among children from single parent homes 2. lower habitual physical activity among girls 3. less PA exercise among African Americans and children from single parent homes; higher sports team participation among older yet physically immature children and higher physical fitness among boys, Caucasians, physically mature children and children from single parent homes</td>
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<tr>
<td>2002</td>
<td>McGuire et al (2002) Pediatric Exercise Science</td>
<td>N=4746, 2382 males, 2364 females. 34.3% in 7th grade, 65.7% in high school. 48% white, 19% black, 19.2% Asian, 5.8% Hispanic, 7.4% mixed/other.</td>
<td>1. Boys spent more time than girls in PA but also spent more time watching TV 2. Younger and older adolescents were equally active and watched equal amounts of TV 3. White adolescents were more active than those of other racial groups. Black adolescents watched more TV than others 4. For boys, time spent in physical activity was positively related to family's fitness concerns, friends' fitness concerns, personal fitness concerns, and health concerns. Time in PA was negatively related to their weight concerns 5. For girls, time in PA was positively related to family's fitness concerns, friends' fitness concerns, their own fitness concerns, and health concerns. 6. There were no significant differences in PA correlates according to race among the girls. 7. Analysis by age found there to be no relationship between grade 7 girls' physical activity and friends'</td>
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<td>Study</td>
<td>Sample Description</td>
<td>Methodology</td>
<td>Results</td>
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<tr>
<td>McGuire et al (2002)</td>
<td>N=800 (477 girls, 60% high school, 29% white, 23% black, 21% Asian, 14% Hispanic, 13% other)</td>
<td>To evaluate relationships between parents' and adolescents' physical activity and television usage and whether these relations differed among adolescents from different racial/ethnic backgrounds</td>
<td>1. No relationship between parents' young people's physical activity and friends' fitness concerns.</td>
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<td>Eating, Exercising, Weight related behaviours. Parental Telephone Survey – parents physical activity levels and sedentary behavior, parental physical activity attitudes, parental demographics and weight information.</td>
<td>2. Adolescents' perceptions of their parents' encouragement for physical activity were positively correlated to girls' physical activity levels.</td>
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<td>Adolescent Survey – Leisure time exercise questionnaire, number of hours watching television and videos, adolescent perception about parents' attitudes, adolescents demographics and weight information.</td>
<td>3. No relationship between parents' and adolescents' physical activity levels.</td>
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<tr>
<td>Morgan et al (2003)</td>
<td>N=120 Mexican Americans (64 girls) and 94 European Americans (45 girls), aged 11.6 years and 12.2 years. USA.</td>
<td>A range of psychological, social, and environmental correlates of physical activity in a bi-ethnic sample. Gender and ethnic differences in the potential correlates.</td>
<td>4. Adolescents' perceptions of their parents' encouragement for physical activity were positively correlated to their time spent in physical activity.</td>
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<td>Physical activity: vigorous activity by 7-day Physical Activity Recall, overall activity by Caltrac accelerometer. Physical activity correlates: items developed based on previous research projects by the same team.</td>
<td>5. No relationship between parents' and adolescents' television time.</td>
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<td>Biological factors: skinfolds measurements.</td>
<td>6. Relationship between parents' concern about staying fit and girls' television time differed by race/ethnicity (positively correlated among black girls).</td>
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<td>Cross-sectional. Questionnaires measured the various aspects of the three theories: Attitude; 8 items consisting of belief and corresponding value statements. Subjective norm; 8 items consisting of normative beliefs and corresponding motivation-to-comply statements.</td>
<td>8. Females were lower in physical activity than males.</td>
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<td>Mexican Americans were lower in PA than European Americans.</td>
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<td>Perceived competence was positively associated with physical activity participation.</td>
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<td>Study Details</td>
<td>Participants</td>
<td>Methodology</td>
<td>Key Findings</td>
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<tr>
<td>Neumark-Sztainer et al (2003) Archives of Pediatrics and Adolescent Medicine</td>
<td>N=201 females, mean age 15.4 years, mixed race USA</td>
<td>Cohort study. Measured: Personal factors: self-acceptance, self-worth, athletic competence, body image, depressive mood, perceived benefits, enjoyment, self-efficacy, BMI Behavioural factors: watching TV, time constraints Socioenvironmental factors: social support, costs/resources</td>
<td>1. The two strongest and most consistent factors associated with change in physical activity were time constraints and support for PA from peers, parents, and teachers. 2. Changes in self-perceptions, global self-worth, and self-efficacy to be physically active were also associated with changes in physical activity.</td>
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<tr>
<td>O'Loughlin et al (1999) Annals of Epidemiology</td>
<td>N=2285 age 9 to 13 grade 4 to 6 of 24 inner city elementary schools in Montreal, Canada, multiethnic, low income families</td>
<td>Height, weight, age, gender, family composition, number of years lived in Canada, family ethnic origin, parents employment status, parents' educational attainment, household income sufficiency, BMI, smoking history, sedentary behaviour. Self-efficacy for physical activity, physical activity choices and parental role modeling and support for physical activity. Socio-demographic characteristics and lifestyle habits of parents with self-administered questionnaire Student questionnaire assessing socio-demographic characteristics, smoking, physical activity and dietary behaviours, and psycho-social indicators related to these behaviours 7 day physical activity recall adapted from the self-reported Weekly Activity Checklist Participation in schools sports teams outside gym class Participation in organized sports outside school</td>
<td>24.4% of girls were inactive 33.3% of girls participated in school sports teams 74.7% participated in organized sports outside school Declines in activity with age Link between participation in organised sports programmes at and outside school with perceived self-efficacy for physical activity Link between parental support for engaging in physical activity and physical activity Children of Asian family origin were less active Socioeconomic status was related to participation in organized sports outside school</td>
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<tr>
<td>Prochaska et al (2002) Research Quarterly for Exercise and Sport</td>
<td>N=138. Grades 6 to 8 in San Diego, CA. Mean age 12.1 years. 28% Caucasian, 23% Asian Pacific Islander, 7% African American, 5% Latino, 37% other. 65% girls</td>
<td>The association of parent and peer support with adolescent physical activity</td>
<td>Cross-sectional. Questionnaires measured: Parent support: parent support scale developed for Amherst Health and Activity Study (Sallis et al, 2002?). Assessed parental encouragement, praise, transportation to PA settings, participation with the adolescent, watching the adolescents' participation in PA or sports Peer support: assessed peer encouragement, participation, praise, and the adolescents' encouragement of peers to be physically active Physical activity: PACE+ Physical Activity</td>
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<tr>
<td>Raudsepp &amp; Viira (2000)</td>
<td>Pediatrics Exercise Science</td>
<td>N=475.233 males and 242 females. Also their biological parents and peers. Age range 13–15yrs, M=14.2yrs. Based in Estonia</td>
<td>Relationships between social class, SES, sex, and exercise behaviour of significant others with physical activity of Estonian adolescents.</td>
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<tr>
<td>Raudsepp &amp; Viira (2000)</td>
<td>European Journal of PE</td>
<td>N=375.184 males, 191 females. Ages 13-14yrs. Estonia.</td>
<td>To examine the parental and sibling influence on adolescents' self-reported PA levels</td>
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<tr>
<td>Raudsepp et al (2002)</td>
<td>Pediatric Exercise Science</td>
<td>N=253 (119 females and 134 males) age 11-14 years Estonia.</td>
<td>To determine the relationship between physical self-perceptions, moderate to vigorous physical activity and physical fitness</td>
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<tr>
<td>Reynolds et al (1990)</td>
<td>Preventive</td>
<td>N=743.388 males and 355 females at start, 356 males and 324 females at</td>
<td>Psychosocial predictors of physical activity in adolescents</td>
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<tr>
<th>Medicine</th>
<th>baseline, 283 and 174 4 months postbaseline, and 233 and 141 16 months postbaseline. Age range 14 to 16 yrs.</th>
<th>health issues, self-report of dietary behaviour, smoking and PA, height, weight, BMI, RHR and blood pressure. Intention and self-efficacy: measured at baseline Direct social influence and stress: measured at 4 months postbaseline PA: Self-report on 19 activity items, measured at 4 months and 16 months postbaseline.</th>
<th>both 4 months and 16 months postbaseline. 3. Stress inversely related to activity for females at 4 months postbaseline. 4. The greater the rated activity of family and friends, the higher the level of PA for females at 4 months. 5. Psychosocial predictors were more consistently related to activity in females than in males.</th>
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<tr>
<td>Sallis et al (1999) Health Psychology</td>
<td>1,504 children in grades 4-12 and their parents. USA</td>
<td>Psychological, biological, social and physical environmental variables for their association with young people's physical activity</td>
<td>Cross-sectional. Data gathered by telephone interviews. Measured potential determinants and physical activity. Analysis by age-sex subgroups Physical activity: 11 item Child Physical Activity Index Explanatory variables: 22 items split into 4 subgroups of demographic, child (psychological and biological, social (family and peer) and physical environmental.</td>
</tr>
<tr>
<td>Sallis et al (1999) American Journal of Preventive Medicine</td>
<td>370 girls and 362 boys in public schools through fourth and 5th grade</td>
<td>Examining modifiable psychological and social correlates of physical activity change over 20 months</td>
<td>A physical activity index was computed from child reports and objective activity monitoring. Predictor variables were assessed by child and parent surveys</td>
</tr>
<tr>
<td>Sallis et al (2002) Pediatric Exercise Science</td>
<td>N=781. In grades 1-12 in Amherst, MA. 48.1% male, 76.9% non-Hispanic white. 200 were selected to wear a CSA activity monitor for seven days</td>
<td>Correlates of PA in subgroups of young people differing by age and sex. Examined only vigorous PA. Compared parent reported and objectively measured PA</td>
<td>Cross-sectional: A parent-report survey was used for all grades and a self-report survey for students in grade 7 and above. Parent survey assessed child's PA and demographic, psychological, social and environmental correlates of youth activity. Asked for activity in the past 7 days, including sports team participation and activity classes CSA activity monitor for 7 days in 200 participants</td>
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<tr>
<td>Source</td>
<td>Study Details</td>
<td>Methodology</td>
<td>Findings</td>
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<tr>
<td>Saxena et al (2002)</td>
<td>N=305. Females aged 12-21, mean 17.9. Inner-city New York. Ethnically diverse.</td>
<td>Cross-sectional: Demographics: age, sex, race/ethnicity, school enrollment and performance, mother's level of education as a proxy for SES Reproductive characteristics: initiation of sexual activity, contraceptive use, number of children the subject cared for PA: number of days in the last week that the subject participated in vigorous activities for at least 20mins, and the number of days the subject engaged in muscle strengthening or toning activities. Parents: weights, physical activity levels, and health status. Health risk behaviours: weapon carrying, cigarette, marijuana, and alcohol use, sexual activity and contraceptive practices. Others: concern about weight, number of friends who exercise, medical conditions limiting exercise, efforts to later weight status, current health status, enrollment and attendance in PE classes, barriers to PA. Also measured height and weight to get BMI.</td>
<td>1. Those who engaged in no vigorous PA were more likely to be older than those who did engage. 2. There were no significant differences on any other demographic characteristics. 3. Sexually active females were more likely to report no vigorous exercise. 4. Vigorous exercisers were more likely to endorse exercising specifically to lose weight than those who did not exercise or only did some exercise. 5. Those getting regular PA were more likely to believe in the importance of exercise, more likely to be enrolled in PE classes, and more likely to be involved in a sports team. 6. Logistic regression analysis found five factors to be associated with regular vigorous exercise: having most or all of your friends exercise, being involved with a sports team, trying to lose weight, believing in the importance of exercise, and being 17yrs old or younger. 7. Barriers reported were not having enough time, self-reported laziness, not having a place to exercise, boring, too painful, not knowing how, and not liking to sweat.</td>
</tr>
<tr>
<td>Schmitz et al (2002)</td>
<td>N=3878 in round one and 3798 in round two. USA. Lower income population. 5th and 8th graders, age range 11-15. About two-thirds Caucasian.</td>
<td>Prospective. The Teens Eating for Energy and Nutrition at School Study. Assessed demographics, SES, and: PA and SLH; self-report scale for this study Depressive symptomatology: Center for Epidemiologic Studies Depression Scale (CES-D) Spirituality: Adapted version of the scale from the Voice of Connecticut Youth Survey Future expectations: 4 items adapted from Voice of Connecticut Youth Survey Parenting style: items developed by Jackson et al (1994, 1998) Value on health, appearance and achievement: developed for this study Perceived academic rank and expected educational attainment: 2 questions from the Connecticut Youth Survey.</td>
<td>1. For girls, parents' education level, authoritative mother scale, value on health, appearance and achievement, and perceived academic rank were predictors of PA. 2. Higher levels of PA were found when girls placed a higher value on health, appearance, and achievement, as well as when girls considered themselves strong students. 3. Age, race, and parents' education level were demographic factors predictive of SLH. African-American and younger girls reported the highest SLH scores. Those with parents with lower levels of education were higher in SLH while those with parents with higher education were lower in SLH. 4. Also predictors of SLH were CES-D score, authoritative mother (-), value on health, appearance, and achievement (-), and perceived academic rank (-). 5. No association of age and PA but there was a decline in SLH score with age.</td>
</tr>
<tr>
<td>Smith</td>
<td>207 female and 211</td>
<td>Cross-sectional. Various constructs measured by greater perceptions of friendship in PA setting.</td>
<td>1. Greater perceptions of friendship in PA setting.</td>
</tr>
<tr>
<td>Study</td>
<td>Participants</td>
<td>Measures</td>
<td>Findings</td>
</tr>
<tr>
<td>--------------------------------------------</td>
<td>----------------------------</td>
<td>--------------------------------------------------------------------------</td>
<td>---------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>JSEP (1999)</td>
<td>Male students aged 12-15 yrs. North west US. Low to middle SES.</td>
<td>Among perceptions of peer relationships, physical self-worth, affective responses toward physical activity, and physical activity motivation in 12-15 yr old adolescents.</td>
<td>Questionnaire: <em>Perceptions of peer relationships</em>: Close friendship and acceptance subscales of the Self-Perception Profile for Adolescents (Harter, 1988). Items adapted by contextualising them to the PA domain. <em>Physical Self-Worth</em>: Physical Self-Worth scale of the PSPP. <em>PA-Related Affect</em>: 3 subscales from Brustad’s (1993) Children’s Attraction to Physical Activity Scale (CAPA). <em>PA Motivation</em>: Cognitive motivation by 5 items from the challenge subscale of the MOSS (Weiss et al, 1985). <em>PA Involvement</em>: LTEQ (Godin and Shephard, 1985). <em>Physical Maturity</em>: Abbreviated version of the Pubertal Development Scale (PDS; Peterson et al, 1988). Associated with positive affect, suggesting that friends influence adolescents’ attraction to sports etc. Greater friendship perceptions predicted higher cognitive motivation and physical activity for females and higher cognitive motivation for males via more positive affective responses to PA. Higher perceptions of peer acceptance related to higher physical self-worth for both males and females. Higher perceptions of peer acceptance related to higher physical self-worth for both males and females. Higher physical self-worth related to more positive physical activity related affect. Patterns of relationships among the variables in males and females were quite similar. Conclusion that in both males and females perceptions of both friendship and peer acceptance in PA settings can contribute to the formation of PA attitudes and behaviours of young adolescents.</td>
</tr>
<tr>
<td>Strauss et al (2001) Archives of Pediatrics &amp; Adolescence Medicine</td>
<td>N=92, 44 boys and 48 girls. Aged 10-16 yrs. US. Mixed ethnicities and SES.</td>
<td>To describe social and cognitive factors associated with PA in children aged 10-16yrs. To further explore the relationship between sedentary activities and physical activity, and the relationship between physical activity and self-esteem.</td>
<td>Cross-sectional: <em>Physical activity</em>: biaxial accelerometer worn during waking hours for 1 week. <em>Social and cognitive factors</em>: Physical activity questionnaire developed by Saunders et al (1997). Comprises three scales measuring self-efficacy (17 items), social influences (8 items), and health beliefs (16 items). Parents completed questionnaires concerning the amount of time each child spent in sedentary activities. <em>Self-esteem and anxiety</em>: Piers-Harris Children’s Self-Concept Scale and the Revised Children’s Manifest Anxiety Scale. 1. Before 13 yrs activity levels were similar in boys and girl; after age 13 boys were significantly more active than girls. 2. Moderate and high level activity decreased significantly between ages 10 and 16: especially among girls where overall time spent in all physical activity was 35% higher in pre-teens compared with teens. 3. Time on sedentary activities, especially television time and computer time, was inversely correlated with moderate activity. 4. Health beliefs, self-efficacy and social influences were not correlated with moderate activity. 5. Age, sex and self-efficacy were significant independent correlates of high activity. 6. Behaviour, happiness, intellectual and popularity self-esteem sub-scores were significantly decreased in children with low levels of high activity. Self-esteem subscores were not related to moderate activity levels. 7. Neither anxiety score was related to physical activity levels. No separate analysis by gender.</td>
</tr>
<tr>
<td>Stucky-Ropp &amp; Di Lorenzo (1993) Preventive Medicine</td>
<td>121 boys and 121 girls from 5th and 6th grades and their mothers. USA. Predominantly white. Middle SES.</td>
<td>Factors affecting a child’s level of physical activity, with the emphasis on social learning variables.</td>
<td>Structured interviews, first with child then with mother for further information. Mothers also given a questionnaire. <em>Physical activity Interview</em>: structured device to record the child’s PA on the 3 previous school days. <em>Children’s Physical Activity Questionnaire</em>: for additional information on PA participation &amp; to assess social learning variables that might be associated. 1. For boys predictor variables were enjoyment of PA, friend and family support for PA, mother’s perceived barriers to exercise, and mother’s perceived family support for exercise. 2. For girls predictor variables were enjoyment of PA, number of exercise related items at home, mother’s perceived family support for physical activity, mother’s perceived barriers to exercise, and direct parental</td>
</tr>
<tr>
<td>Tappe, Duda &amp; Menges-Ehrwald (1990)</td>
<td>The relationship between the psychosocial components of Personal Investment Theory and the exercise behaviours of adolescents</td>
<td>Cross-sectional. Measured activity level, demographics, and: Personal Incentives: Adolescent's Personal Incentives for Exercise Questionnaire (Tappe and Duda, yr?) Sense of self: Physical competence by 3 items. Goal directedness by 10 items off the Self-Motivation Inventory (Dishman &amp; Ickes, 1981). Self identity by two items asking them to rate perceived activity of significant others. Self reliance by 3 subscales in the Fitness Status Locus of Control Scale (Whitehead and Corbin, 1988) Perceived options; by measuring 9 barriers to exercise</td>
<td>1. Males engaged in exercise to increase their strength and skill, to improve appearance and flexibility, to gain health benefits of exercise, and to experience competition and receive recognition. Females viewed exercise as a means to improve appearance and flexibility, to be with their friends, to manage stress, to increase their strength, and to manage their weight. Barriers reported by both males and females were wanting to do other things with their time, lack of interest, bad weather, school work. 2. Males had higher perceptions of physical competence than females. Females were more likely to be self-motivated, to have an external-other oriented fitness locus of control, and to perceive those around them to be physically fit 3. Greater PA levels in males were associated with fewer perceived barriers and the perception that one's significant others are physically fit. In females a high level of PA was related to perceived competence, self motivation, locus of control - luck, and the incentive of exercising to improve physical strength. 4. High levels of PA were related to high perceptions of physical competence, especially in girls who were generally lower in perceived physical ability 5. Less active adolescents viewed weight management and improved flexibility as important exercise incentives.</td>
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<tr>
<td>Taylor et al (2002) Pediatric Exercise Science</td>
<td>Compared overweight and non-overweight youth to see: 1. If there were differences in activity patterns 2. If there were differences in psychosocial correlates of PA 3. If there were differences in levels of these psychosocial correlates</td>
<td>Two questionnaires, one parent-report and one self-report for the older children. Measured correlates of activity, child's activity level and parent's activity. Child's activity was taken over the previous seven days. Correlates included environment, attitudes, household, peer, and parental influences on PA. Also measured BMI, using the 85th percentile of BMI as the cutoff for the overweight measure. 200 children also wore a CSA monitor for 7 days.</td>
<td>1. overweight youth were more sedentary than non-overweight youth 2. Overweight girl were more sedentary than non-overweight girl and overweight girls engaged in less VPA than non-overweight girls 3. Overweight boys did not differ from non-overweight in comparisons of correlates. For girls parents or guardians perceived overweight girls to be significantly less safe in the park than non-overweight girls; overweight girls perceived greater barriers, less peer support, fewer activity choices, less athletic coordination, and less enjoyment of physical activity than non-overweight girls 4. Both overweight boys and girls were more likely to have dieted to lose weight in the past 30 days than non-overweight boys and girls. They were also more likely to exercise to lose weight than non-overweight youth. More analyses by gender would have been useful.</td>
</tr>
<tr>
<td>Trost et al (1997) Preventive Medicine</td>
<td>Predictors of VPA and MVPA among rural, predominantly African-American children</td>
<td>Prospective. Psychosocial and environmental variables measured at baseline, physical activity behaviour measured at 12 month follow up (6th grade) PA: PDPAR on 3 consecutive days Psychosocial variables: self-efficacy (support seeking, overcoming barriers, competing activities), social influences regarding PA, and beliefs about PA outcomes. PA self-efficacy scales and social influences scale taken from scales developed by Reynolds et al (1990). Additional barriers items taken from Tappe et al (1989), beliefs about PA outcomes developed for this study. Environmental variables: single items including perceived PA habits of parents and peers, like or dislike of PE, access to equipment at home, participation in school sports, participation in community sports, involvement in community PA</td>
<td>5. For overweight youth, ethnic minority youth were more active than non-Hispanic white youth. For non-overweight youth, family support, peer support, and activity choices were significant variables 6. For moderate intensity activity: dieting to lose weight was significantly related for overweight youth, for non-overweight youth family support and exercising to lose weight were significant variables. Boys were also more active than girls. 7. For vigorous intensity activity: overweight ethnic minority youth were more active than overweight non-Hispanic white youth and among all overweight youth athletic coordination was significant. Among non-overweight youth, family support, peer support, fewer barriers, and athletic coordination were significant. 8. In the number of classes and team sports analyses no variables were significant among overweight youth; among non-overweight youth younger age, greater family support, fewer barriers, greater athletic coordination, and more likely to exercise to lose weight were significant. 9. Conclusion for girls that that overweight girls spent more time in sedentary behaviours than non-overweight girls and non-overweight girls engaged in more VPA than overweight girls. Overweight girls perceived greater barriers, less peer support, less athletic coordination, fewer activity choices, and less enjoyment of PA than non-overweight girls</td>
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</table>

N=202. Fifth grade at baseline. 64% African-American. 55% female. South Carolina. | | |
<table>
<thead>
<tr>
<th>Study</th>
<th>Sample</th>
<th>Methodology</th>
<th>Findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trost et al (1999) American Journal of Preventive Medicine</td>
<td>N=198 (103 female) 6th grade students from 4 public schools in USA. Mean age 11.4 +/- 0.6 years</td>
<td>To identify the psychosocial and environmental correlates of objectively measured physical activity behaviour</td>
<td>Time spent in Physical Activity: uniaxial accelerometer. Demographic variables: Age, gender, race/ethnicity Psychosocial variables: Physical Activity self-efficacy, social norms related to physical activity, beliefs regarding physical activity outcomes Environmental variables: physical habits of parents and peers, involvement in community physical activity organizations, involvement in community-based sports programs, access to fitness/sporting equipment at home and self-reported hours spent watching television or playing video games</td>
</tr>
<tr>
<td>Trost et al (1999) Journal of School Health</td>
<td>N=110. 59 female, 51 males. Mean age 11.4</td>
<td>Determinants of physical activity in active and low-active African-American sixth grade children</td>
<td>Cross-sectional. Questionnaires measured: Psychosocial variables: physical activity self-efficacy, social influences regarding physical activity, beliefs regarding physical activity outcomes. Scales modeled on those of Saunders et al (1997). Environmental variables: perceived physical activity behaviour of parents and peers (active vs. low active), access to sporting and/or fitness equipment at home, involvement in community PA organisations, participation in community sports teams over the preceding 6 months, self-reported hours spent watching TV or playing video games. Items were modified from measures used in the National Children and Youth Fitness Study and the 1990 Youth Risk Behaviour Survey. Physical Activity: Accelerometer (CSA WAM 7164) to characterise participation in sustained (20 mins) MVPA over a 7 day period. Students defined as active if they had 3 or more bouts of MVPA over the monitoring period</td>
</tr>
<tr>
<td>Trost et al (2002) Journal of Adolescence</td>
<td>N = 2144 African American and White girls. USA. Mean age 13.6 +/- 0.7 years</td>
<td>To evaluate the relative utility of the Theory of Reasoned Action and the Theory of Planned Behaviour in explaining intentions and physical activity behaviour in white and African American</td>
<td>Physical Activity: 3 day physical activity recall Questionnaire assessing attitudes, subjective norms, perceived behavioural control, self-efficacy, and intentions related to regular participation in moderate to vigorous physical activity (from previously published instruments or specifically developed for the current study)</td>
</tr>
<tr>
<td>Study</td>
<td>Sample</td>
<td>Design</td>
<td>Methodology</td>
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</table>
2. Males were higher in task orientation, ability and enjoyment than females whereas females were higher in cooperation and boredom.
3. Active females reported higher task orientation, cooperation and enjoyment/interest and lower deception and boredom than low active females.
4. Correlation calculations found cooperation (+) and boredom (-) to be related with MVPA.
5. Regression analysis found 14% of the variance in MVPA to be explained by cooperation, enjoyment and boredom. |
2. In the follow up measurement, time barriers, body satisfaction, use of afternoon time, enjoyment of physical activity, friend’s attitudes, and father’s and mother’s level of physical activity were the most significant predictors of activity. |
| Viljalmsson & Kristjansdottir (2003) Social Science & Medicine | N=3270, 49.5% female. Icelandic students in 6th, 8th, and 10th grade, range of SES’s. | Leisure time physical activity: two questions asking how often and how many hours each week they participated in organized sports.
Strenuous activity: two questions asking how often and how many hours each week they engaged in activity that made them sweat or get out of breath.
Relationship to sports clubs: questions asking whether or not they were members of sports club(s).
Socialisation and attitudinal variables: leisure time PA of father, mother, older brother, older sister, best friend, and main teacher. Importance of sports, achievement, how they liked PE classes, whether they had been taught at school the value of sport and exercise.
Background variables: age, social class, residence | The contribution of organized sport clubs to gender differences in overall and strenuous physical activity | 1. Girls’ lower enrollment in sports clubs fully accounted for gender differences in frequency of overall physical activity and largely accounts for gender differences in frequency of strenuous activity.
2. There was a small but statistically significant gender difference in overall physical activity, with boys being more active than girls. |
| Wu et al (2002) Journal of | Taiwan: N=969. 55% male, 45% female, age range | Cross-sectional: Physical activity: Child/Adolescent Activity Log each day for a one week period | Comparative analysis of the determinants of | 1. In both Taiwanese and American youth, boys were more active than girls.
2. Taiwanese girls reported lower self-efficacy to |
| Nursing Research | Physical activity among adolescents in Taiwan and the US | Physical activity cognitions: perceived benefits, perceived barriers, perceived self-efficacy | Interpersonal influences: social support, norms, models | Girls in the US sample reported lower overall self-esteem compared to boys.  
3. In both Taiwanese and American youth perceived benefits predicted physical activity. Benefits included looking better, staying in shape, having fun, having contact with friends, feeling happier, and feeling healthier.  
4. Barriers did not emerge as a significant predictor among Taiwanese youth as they did among American youth. In both youth, however, the more self-efficacious they were, the fewer barriers they perceived to being active on a regular basis.  
5. Physical activity self-efficacy was a predictor of PA among both sets of youth. In the Taiwanese sample it directed predicted activity whilst in the American sample higher self-efficacy resulted in increased beliefs about benefits and decreased beliefs in barriers and so subsequently resulted in a higher levels of PA.  
6. Among Taiwanese youth there was a direct effect of peer influence on PA and a negative effect of family influence. Among American youth both family and peers influences PA but indirectly via decreased beliefs concerning barriers and increased beliefs concerning benefits. |
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<tbody>
<tr>
<td>12-15yrs, mean 13.5 US: N=286, 48% male, 52% female, racial distribution of 30.4% African American, 62.6% European American, 7% other, age range 10-13?</td>
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</table>
| Zakarian et al (1994) Preventive Medicine | Correlates of vigorous exercise among low SES and minority adolescents | Cross-sectional. Questionnaires measured vigorous exercise outside of school PE and various IVs selected based on operant and social learning theories. Also measured BMI. Questionnaire designed for this study. | 1. Males and 9th graders were more active than females and 11th graders, both in and out of school.  
2. For females, self-efficacy, perceived barriers (-), family support, year in school (-), unfavourable attitude toward PE (-), alcohol consumption, BMI, and perceived benefits accounted for most of the explained variance in vigorous exercise outside of school.  
3. When looking at exercise both outside of school and in school PE then self-efficacy, family support, year in school, unfavourable attitude toward PE, BMI, and perceived benefits were correlates but perceived barriers and use of alcohol were not significant in this equation.  
4. Coach support for exercising and positive body image were significant in the equation predicting overall vigorous exercise but they did not explain vigorous exercise outside of school. | | |
Appendix B: Study data for systematic literature review
<table>
<thead>
<tr>
<th>Study</th>
<th>Country</th>
<th>Total</th>
<th>Female</th>
<th>Age</th>
<th>Ethnicity</th>
<th>Design</th>
<th>Quality of PA Measure*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aaimio et al (2002)</td>
<td>Finland</td>
<td>4906</td>
<td>2652</td>
<td>16 at baseline</td>
<td>-</td>
<td>longitudinal</td>
<td>b</td>
</tr>
<tr>
<td>Berkey et al (2000)</td>
<td>USA</td>
<td>10769</td>
<td>6149</td>
<td>9 to 14</td>
<td>mostly white</td>
<td>prospective</td>
<td>b</td>
</tr>
<tr>
<td>Biddle &amp; Armstrong (1992)</td>
<td>England</td>
<td>72</td>
<td>35</td>
<td>11 to 12, mean 12.2</td>
<td>-</td>
<td>cross-sectional</td>
<td>b and c</td>
</tr>
<tr>
<td>Bungum &amp; Vincent (1997)</td>
<td>USA</td>
<td>852</td>
<td>852</td>
<td>14 to 18</td>
<td>626 African American, 226 Caucasian</td>
<td>cross-sectional</td>
<td>b</td>
</tr>
<tr>
<td>Bungum et al (1999)</td>
<td>USA</td>
<td>852</td>
<td>852</td>
<td>14 to 18</td>
<td>626 African American, 226 Caucasian</td>
<td>cross-sectional</td>
<td>b</td>
</tr>
<tr>
<td>Bungum et al (2000)</td>
<td>USA</td>
<td>520</td>
<td>265</td>
<td>13 to 18</td>
<td>66% white, 34% black or other</td>
<td>cross-sectional</td>
<td>b</td>
</tr>
<tr>
<td>Carroll &amp; Loumides (2001)</td>
<td>England</td>
<td>922</td>
<td>454</td>
<td>10 to 11</td>
<td>44% white, 20% African American, 12% Hispanic, 8% Asian, 16% other</td>
<td>cross-sectional</td>
<td>b</td>
</tr>
<tr>
<td>Craig et al (1996)</td>
<td>USA</td>
<td>305</td>
<td>143</td>
<td>10 to 14</td>
<td>44% white, 20% African American, 12% Hispanic, 8% Asian, 16% other</td>
<td>cross-sectional</td>
<td>a and b</td>
</tr>
<tr>
<td>Crocker et al (2000)</td>
<td>USA</td>
<td>1466</td>
<td>712</td>
<td>11.7 +/- 1.2</td>
<td>-</td>
<td>cross-sectional</td>
<td>b</td>
</tr>
<tr>
<td>Deflandre et al (2001)</td>
<td>France</td>
<td>80</td>
<td>44</td>
<td>11 to 16</td>
<td>-</td>
<td>cross-sectional</td>
<td>a and c</td>
</tr>
<tr>
<td>Deflandre et al (2001a)</td>
<td>France</td>
<td>48</td>
<td>22</td>
<td>16 to 19, mean 17.0</td>
<td>-</td>
<td>cross-sectional</td>
<td>a and c</td>
</tr>
<tr>
<td>Douthitt (1994)</td>
<td>USA</td>
<td>132</td>
<td>38</td>
<td>14-17</td>
<td>-</td>
<td>cross-sectional</td>
<td>b</td>
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<tr>
<td>Duncan et al (2002)</td>
<td>USA</td>
<td>356</td>
<td>178</td>
<td>10 to 14, mean 12.06</td>
<td>73% white</td>
<td>cross-sectional</td>
<td>b</td>
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<tr>
<td>Eisenmann et al (2002)</td>
<td>USA</td>
<td>15143</td>
<td>-</td>
<td>14 to 18</td>
<td>mixed</td>
<td>cross-sectional</td>
<td>b</td>
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<tr>
<td>Fairclough (2003)</td>
<td>USA</td>
<td>33</td>
<td>13</td>
<td>11 to 14, female mean 13.0</td>
<td>-</td>
<td>cross-sectional</td>
<td>c</td>
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<tr>
<td>Felton (2002)</td>
<td>USA</td>
<td>1668</td>
<td>1668</td>
<td>mean 13.4</td>
<td>black and white</td>
<td>cross-sectional</td>
<td>b</td>
</tr>
<tr>
<td>Gordon-Larsen et al (1999)</td>
<td>USA</td>
<td>13157</td>
<td>6701</td>
<td>12 to 22</td>
<td>mixed</td>
<td>longitudinal</td>
<td>a</td>
</tr>
<tr>
<td>Gordon-Larsen et al (2000)</td>
<td>USA</td>
<td>17766</td>
<td>9039</td>
<td>11 to 21, mean 15.5</td>
<td>representative range</td>
<td>longitudinal</td>
<td>a</td>
</tr>
<tr>
<td>Gordon-Larsen et al (2002)</td>
<td>USA</td>
<td>12759</td>
<td>6469</td>
<td>11 to 19, mean 15.9</td>
<td>mixed</td>
<td>longitudinal</td>
<td>a</td>
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<tr>
<td>Guinn et al (1997)</td>
<td>USA</td>
<td>254</td>
<td>254</td>
<td>13 to 15, mean 14.4</td>
<td>Mexican American</td>
<td>cross-sectional</td>
<td>b and c</td>
</tr>
<tr>
<td>Guinn et al (2000)</td>
<td>USA</td>
<td>234</td>
<td>177</td>
<td>12 to 16, mean 13.4</td>
<td>Mexican American</td>
<td>cross-sectional</td>
<td>b</td>
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<tr>
<td>Higgins et al (2003)</td>
<td>Canada</td>
<td>12129</td>
<td>6195</td>
<td>12 to 24</td>
<td>-</td>
<td>cross-sectional</td>
<td>a</td>
</tr>
<tr>
<td>Ingleed &amp; Sullivan (2002)</td>
<td>Germany</td>
<td>180</td>
<td>90</td>
<td>11 to 13 &amp; 17 to 10</td>
<td>-</td>
<td>cross-sectional</td>
<td>b</td>
</tr>
<tr>
<td>Kemer et al (2001)</td>
<td>USA</td>
<td>295</td>
<td>295</td>
<td>mean 13.97</td>
<td>9 to 10 at base, 18 to 19 at end</td>
<td>cross-sectional</td>
<td>a</td>
</tr>
<tr>
<td>Kimm (2002)</td>
<td>USA</td>
<td>2379</td>
<td>2379</td>
<td>9 to 10 at base, 18 to 19 at end</td>
<td>black and white</td>
<td>longitudinal</td>
<td>b</td>
</tr>
<tr>
<td>Lasheras et al (2001)</td>
<td>Spain</td>
<td>1343</td>
<td>656</td>
<td>6 to 15</td>
<td>-</td>
<td>cross-sectional</td>
<td>a</td>
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<td>-</td>
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<td>57</td>
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<td>583</td>
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<td>Taiwanese and 62.6% European American, 30.4% African-American</td>
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<td>59</td>
<td>Zakarian et al (1994)</td>
<td>USA</td>
<td>1634</td>
<td>815</td>
<td>mean 15.88</td>
<td>60.2% Latino, 21.4% Anglo, 12% Asian, 3.7% African-American</td>
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Appendix D: Study 2 focus group interview schedules
Focus group study of girls in years 10 and 11 (non GCSE PE students)

Introductions:
- Introduce myself, say who I am and what I do. Explain my research in terms of the themes of physical activity, motivation and femininity and that today I would like to discuss issues with them relating to these key themes. Explain that the focus group will be recorded and that the findings will be used to help my research. Ask if everybody is happy to be recorded, ensuring confidentiality. Ask everybody to sign the informed consent form.
- Ask everybody to tell me their name and age.

The discussion:
1. Sport, exercise and physical activity – Importance and choices
   - Ask the girls if they consider it important to be physically active and why so. What do they perceive the benefits of regular activity to be? What sort of things do they think they should do and how often?
   - Ask if physical activity is something that is important to them personally in their day to day lives and how it rates in importance compared to the other things that go on in their daily lives.
   - Ask them if they consider themselves to be physically active. How much and what types of activity do they each do? What are the reasons behind their choices to be active or not and for those who are active, what are their reasons behind their choice of activity (e.g. rewards, something to aim for, enjoyment)?
   - Do they have any non-sporting hobbies? What do they tend to do in their spare time and what are their favourite spare time activities?
   - Would those who aren’t so active like to be more active? If so, what sort of things might make them consider becoming so?

2. School activity
   - Ask the girls who enjoys or doesn’t enjoy school activity and which of the school activities they like and dislike.
   - Do they prefer the sport activities or the fitness activities? What reasons do they give for their preference? What do they like and dislike about each of the types of activities?
   - Do they feel there is enough choice for there to be something for everybody to be able to enjoy themselves? Does a lack of choice affect their enjoyment and do they think they would enjoy it more if there was something else they could do?

3. Issues of femininity
   - Ask the girls to consider a typical feminine girl and a typical unfeminine girl and to then explain to me what they think each of the two is like.
   - Ask them to go on and consider how the girls might differ in terms of their sporting and activity interests.
   - When considering their physical activity choices do they worry about how the decisions might impact on their femininity and other people’s perceptions of them as feminine beings? (If necessary ask them how important it is to them to be and be seen as feminine beings.)
• Do significant others' (e.g. parents or friends) reactions to their interests or activities suggest that the issue of being feminine is something that is important and should be considered? For example have their parents ever stopped them doing anything because it is rough, dirty or dangerous?
• Are the reasons for any of their exercise choices those seen to be associated with women's exercise, e.g. weight loss, attractiveness, etc? If so, do they also enjoy this exercise or is it taken solely for the benefits of body improvement?

4. **Confidence Issues**
• Ask them if they feel self-conscious wearing swimming costumes or P.E. kit. If so what reasons do they give for self-consciousness?
• Would they prefer to have single sex or mixed P.E. and why?
• Ask them if they would prefer to be grouped according to ability or in mixed groups and why so.
• In classes do they worry if they make a mistake? Do other pupils make fun of them if they make a mistake?
• If it's a team sport do they worry about letting their fellow team members down?
• Both in and out of school how do they measure their ability and achievement - by doing well according to their own standard or by comparison with others? If comparing with others, does negative comparison affect their enjoyment?

5. **Roles of peers**
• Do they prefer to exercise alone or in company? If in company then who do they prefer to exercise with?
• How do friends affect their choice of in and out of school activity? For instance if their was something new they wanted to do would they try to persuade a friend to go with them? Would it matter if nobody would do it with them? Would they still go? Would it affect their enjoyment if they did go alone? Is there something they would like to do if only they could find a willing partner to do it?
• Does family have any influence on their choice of new activities or continuation or existing activities? Are other members of their family active in any way? What do they do?

6. **Enjoyment**
• What do they think the main factors are that would contribute to their enjoyment of a given activity?
• Ask if they think their experiences and enjoyment of P.E. in school affect their participation and enjoyment out of school.
• Is enjoyment regardless of ability promoted by the teachers? If so, can this be undermined by other pupils?
• Ask if they believe that you enjoy a particular sport or activity more if you are better at it.
7. **Barriers**
- Ask those who don't do much physical activity why this is so. For those who are regularly active ask them to consider what sort of things they think might stop them from being so.
- Ask everybody to consider what sort of things might make them want to be more physically active. Prompt as necessary with suggestions of various physical and psychological barriers.

8. **Summary**
- Ask the girls if there's anything they'd like to tell me that I haven't asked them about. Ask them of all the issues we have discussed today what was the most important to them and why.

Thank the girls for their time and say goodbye.
Focus group study of girls in years 10 and 11 (GCSE PE students)

Introductions:
- Introduce myself, say who I am and what I do. Explain my research in terms of the themes of physical activity, motivation and femininity and that today I would like to discuss issues with them relating to these key themes. Explain that the focus group will be recorded and that the findings will be used to help my research. Ask if everybody is happy to be recorded, ensuring confidentiality. Ask everybody to sign the informed consent form.
- Ask everybody to tell me their name and age.

The discussion:
1. Concepts of sport, exercise and physical activity
   - Ask them to consider for a moment what the words sport, exercise and physical activity mean to them. How do the three differ to them?
   - Explain that for the purposes of this research it is physical activity of any kind that I am interested in.

2. Importance and benefits of physical activity
   - Ask the girls if they consider it important to be physically active and why so.
   - What do they perceive the benefits of regular activity to be?
   - What sort of activity do they think they should do and how often?
   - When taking part in physical activity do they consider the benefits at all? If so, which are the most important to them?

3. School activity
   - Ask the girls why they chose to do the PE GCSE.
   - Do they want to do anything with it afterwards?
   - How do the GCSE PE classes compare with the general PE classes (probe to see whether they behave differently in the two and if so why and how, how the attitudes of the others differs from their own, the level of the classes etc).
   - What are their favourite aspects of school PE and why?

4. Out of school
   - What do they do out of school?
   - What made them first decide to take it up?
   - What do they feel they get out of it (probe for extrinsic / intrinsic and task / ego type rewards, also competitiveness versus personal gains)?
   - What motivates them to continue with it (probe again for extrinsic and intrinsic motivators)?

5. Family
   - Are any family members active? What do they do?
   - Do they feel that having active family members helped or encouraged them to become more active?
6. **Friends**

- Did they find it difficult to fit both training and socialising into their lives?
- What happens if they get a boyfriend?
- Are their friends active?
- Do they try and encourage their inactive friends to do more?
- What reasons do their friends give for not being more active?
- What do they perceive are the real reasons for their friends' inactivity?

7. **Barriers**

- Do they find that things stand in the way of them being as active as they would like?
- What barriers can they identify?
- Are these specific to their age now?
- How could those around them make it easier for them to be more active?

8. **Enjoyment**

- What do they think the main factors are that contribute to their enjoyment of a given activity? (What makes for the ultimate enjoyable activity?)

9. **Issues of femininity**

- Explain that I am interested in how developing a feminine identity fits in with sport and activity choices for today's teenager.
- Do they perceive themselves as feminine?
- Is it important to them to be feminine and to be seen by others to be so?
- How do they find attempting to be feminine ties in with their sporting lives?
- If there is a conflict what is most important to them?
- Do other people make fun of them for their sports choices in ways that might suggest these people see them as being less feminine than other non-sporty girls (probe to find out whether boys or other girls are most guilty of this)?
- How might a feminine girl differ from an unfeminine girl in terms of her appearance, her personality and her activity interests?
- Do they think it is possible to be both sporty and feminine?

10. **Confidence**

- Do they feel that having done the GCSE PE has helped with their confidence levels in both sport and in day to day life? How?
• If this is the case then how do they think PE could better be structured to help increase the confidence of those not doing GCSE and also to make them enjoy it more?

11. Summary
• Ask the girls if there's anything they'd like to tell me that I haven't asked them about.
• Of all the issues we have discussed today what was the most important to them and why.

Thank the girls for their time and say goodbye.
Appendix E: Study 2 focus group consent form
Student consent form

I, __________________________ (please write your name in BLOCK capitals) understand that I have agreed to participate in a study conducted by Loughborough University about adolescent girls' experiences of physical activity.

I understand that I am being asked to participate in a group discussion about my involvement in and enjoyment of sport, exercise and physical activity in and out of school.

I understand that all the information provided in the group discussion is strictly confidential and will be seen only by members of Loughborough University. I have also been told that my name and identity will not be used when you write or talk about the study in the future.

I understand that my involvement in the study is voluntary and I have been told that I am free to withdraw from participating at any time.

Your Signature: __________________________ Date: __/__/____

Should you have any questions about your involvement in the research project, please contact Sarah Whitehead (Tel: 01509 228450) or Professor Stuart Biddle (Tel: 01509 223287), Department of Physical Education, Sports Science & Recreation Management, Loughborough University.
Appendix F: Study 2 example audit trail materials
1. Example post focus group summary report

Summary of Rawlins focus group on Weds 12th December 2001.

This was again a group of year 10 girls. This time there were six girls and this seemed to work better than the smaller group. They were slightly more chatty than group one but again were not massively forthcoming. Again I got the feeling that with the exception of one girl sport and exercise just wasn’t that important to them. One girl seemed to actively dislike any sort of activity, one did seem to think about it and want to do more but didn’t really like it, and the others didn’t seem to really care either way. It seemed that a few of them used to do more when they were younger but they had pretty much all stopped everything for either no particular reason or just the reason that they had lost interest. Again they seemed to be happier talking about facts than anything they needed to think about and they didn’t seem to have considered any of the issues in any great depth.

All the way through there seemed to be some confusion about some of the topical issues. At the beginning of the conversation one of the girls spoke about letting her team members down and not wishing to do this, later on all of the girls spoke about not really having concerns within a team and yet here the same girl speaks again about letting people down. She also speaks of not wanting to compete against anybody but herself (lines 77-83, 101-118, 253-290, 304-309). Within this theme they spoke about preferring to be in mixed ability groups because otherwise the group of better ability players would simply beat those of a lower ability and they thought this would have a greater impact on enjoyment. When on mixed teams they didn’t bother to rate themselves against the other players and were just concerned with getting on and having a good game.

Regarding self-consciousness and appearance they seemed to have quite a mature attitude with the general attitude being one of “I’m just me”. They tended to say they weren’t bothered by what boys thought or said as all of the boys looked horrid in their swimming costumes anyway. Later on however they did express concerns about the
boys picking on them and this did seem to bother them enough for them to want single sex PE in some cases (lines 81-100 and 197-252).

Other issues discussed included that of whether they would go to classes on their own or not, with only one girl saying she would do this and even she admitted that she would feel a little bit silly. The others thought she was mad and when asked how they would feel if they did go to an activity on their own their responses went along the lines of scared, lonely, self-conscious and worried what others would think of them (lines 312-355).

Some spoke of their mothers trying to have a positive influence on them, either by doing things with the girls or by persuading them to do stuff and carry on with their existing active hobbies. All agreed that mostly it was their mums who were the influence and some said that their mums expressed a wish that their daughters did more activity (lines 365-399).

The best intrinsic motivation mentioned for doing any activity was simply that they liked it and enjoyed taking part. This was only mentioned for out of school activities (lines 291-303). Regarding in school games and sports, the feeling mainly seemed to be that they were just a bit boring really. Apart from the one motivated girl there just didn’t seem to be enough there to motivate them.

A theme all the way through was that they all thought they should do more but didn’t because either they didn’t like it or they didn’t think they were any good at it or couldn’t be bothered etc etc. They did agree that it was important for health reasons to be active but none of found it particularly important in their day to day lives to bother with doing anything. Generally speaking there was a real feeling of apathy and they knew they should do more but just couldn’t be bothered. They don’t want to get up off their arses and exert themselves, they just don’t seem to like it, especially the two girls K and M.

One of the girls does say that she just doesn’t like exercise and if she liked it more she would do it more but it’s just not her. Basically the girls are just not bothered and the
one who is bothered sees herself as weird. She doesn’t see it as a normal thing for either her or a teenage girl (open to interpretation) to like sport and activity.
2. Example section from a focus group transcript

S: Alright, moving on. What sort of things do you think could make your life easier so that you could do more activity or what might make ...

L: Quit school.

E: No GCSEs.

L: Finish it off. I think we’ll do more in summer, coz we’ll have nothing to do in summer, coz we’ll have finished out GCSEs and we haven’t started A levels yet so it’s going to be so good, just like, if we’re bored we’ll do more exercise. But yeah.

S: Okay. And in general what sorts of things do you think would make it so that people would want to do more exercise, if we’re talking on a really general level, how do you think people could be made to do more?

M: It’s really hard to encourage people to do more exercise isn’t it because it’s such an effort.

L: Music and stuff maybe. I don’t know.

M: Maybe, you’d feel like dancing, like aerobics and stuff ...

L: I don’t know though, how you could do it.

E: Make it easier at school for people, make it more interesting. Some of the sports are really boring.

L: It depends on the teachers actually coz one teacher makes it so fun it’s unbelievable and the other teacher, I was like, “do I really have to go PE now?”. He just did nothing, just let us do anything but it was so boring it was unbelievable, I was like, “no way”. And now we’ve got the other teacher back so it’s cool.

M: Yeah, enjoyment. If you don’t enjoy it you don’t want to do it anymore.

S: Okay. What sort of things do you think the main factors are that contribute to enjoyment of any activity?
M: Kind of knowing that you're exercising but not putting hard work into it.

E: Yeah.

M: Like we had a mat race didn't we? We had these massive mats and then you just run and jump and loads of people like, you know ... and that was, people have got loads of energy and ...

A: Trampolining, that's fun.

E: Yeah.

M: But not stuff like having to jog on the spot for like, half an hour.

L: If you get into a game, say a basketball game, if you get into it and you're having fun then that's great coz you don't want to stop. I always feel really fit after I've had a basketball game.

M: Yeah but when it's like star jump, star jump, it's boring.

L: Also it's really easy to skive PE. So if people don't want to do it ...

E: Is it?

L: Loads of people skive PE because although they're like "oh where were you?" and you're like "oh I had a dentist's appointment", you blatantly haven't had a dentist's appointment and you can get away with it because it's only PE.

A: Everyone thinks that, it's only PE.
3. Example of how the analysis was carried out

A quote:

"I'm alright once I'm in the water, it's just like walking out with just your swimming costume on when you've got a whole row of people sitting watching ..."

Is assigned the label "self-presentational concerns".

A second quote:

"You enjoy it more if you are better at it coz you don't feel as self conscious then about everyone watching you when you're doing bad."

Is also felt to relate to self-presentational issues. However, whereas the first quote relates to appearance, the second relates to ability. The two labels of "appearance related self-presentational concerns" and "ability related self-presentational concerns" are therefore created. The first quote is attached to the appearance related label, the second to the ability related label.

A third quote:

"I mean I do but I just run and jump in straight away don't I? With a towel wrapped round me."

Is compared to quote one and is felt to be conceptually similar. This quote is also attached to the label "appearance related self-presentational concerns".

A fourth quote:

"And sometimes your friends, coz they're not always as sporty as you they just don't want to do it so you just like, do what they want to do ... Yeah coz sometimes you do
want to do sport but there’s a film you want to watch or something and your friend wants to watch the film rather than doing sport so you have to watch the film.”

Is compared to both of the quotes in the appearance related label but is felt to be different. It is then compared to the ability related quote but again is felt to be different. This quote is therefore given a new label of “different priorities between more and less active girls”.

This process continues until all the quotes have compared, clustered together where similar, and set aside where different, and so have all been assigned labels.

The labels are then compared to one another to form categories. Here, the two labels “appearance related self-presentational concerns” and “ability related self-presentational concerns” are felt to be similar and so are placed into the one category of “self-presentational concerns”. The label “different priorities between more and less active girls” does not relate to self-presentational concerns and so must go into a separate category. This label is felt to be similar to the label “changing priorities upon becoming a teenager” and so these labels are categorised together under the heading “priorities”. Again, this process continues until all labels have been compared, contrasted, and categorised.

Finally, the emergent categories are examined and over-arching themes are developed. In this instance, the two categories of “self-presentational concerns” and “priorities”, despite containing conceptually different material, are felt to both relate to aspects of a teenage culture. These two categories, with their labels and quotes within them, are therefore grouped together under the major theme of “Aspects relating to the teenage culture”. Other categories are examined and, where appropriate, are also placed under this theme.

Some categories, however, are felt to not relate to the teenage culture. These are the categories of “enjoyment”, significant others”, “benefits of being active”, and “barriers to being active”. These categories are grouped together under the theme of “Other aspects having an influence on physical activity”. This theme is deliberately general to capture the diversity of the categories within it.
Appendix G: Study 3 questionnaire
This is a survey about how you take part in sport and physical activity. This is not a test - there are no right or wrong answers! No one in your school or community will see these questionnaires so please be as accurate and honest as possible when you complete these questions. If there is a question you don’t understand or aren’t sure about then please ask. To help you understand what we mean by Sport and Physical Activity we have a short description:

**Sport:** when we say ‘sport’ we mean those listed below and any others that you would think of as sports, plus any training for taking part in them. We include sports that involve competition (including training for competitions) and have rules, such as football, netball, athletics, and golf and we also include dancing and snooker/billiards/pool. We do NOT include chess and similar ‘inactive’ games.

**Physical activity:** when we say ‘physical activity’ we mean all other types of physical activities that require effort, such as in walking, stair climbing, playing in the street for fun or enjoyment rather than for competition or training. This includes cycling to school and walking the dog. It does NOT include playing on computer or other activities with very small movement.

Part A is about your sport and physical activities over the **past 4 weeks OUTSIDE of school PE.** Think about any sports and physical activities you’ve done, including those done before and after school, at school, at home and away from home, and on weekends but **not** during school PE. For sports, please include training and playing. Do list just what you’ve done in the last four weeks, not what you have done at other times. No one does all these activities! For each activity listed, answer three questions:

1. In the last four weeks have you done any of these sports and other physical activities? Please circle N (no) if you have not done or Y (yes) if you have for each activity listed.
2. For each activity where you answered yes, in the next column write in the number of days in the last 4 weeks when you took part (1 to 28)
3. In the last column please write in how many minutes, on average, you did this activity on the days that you did it? Don’t count time spent changing or warming up.

**Outside of school physical education classes**, which of these have you done in the **4 weeks**?

<table>
<thead>
<tr>
<th>ACTIVITY</th>
<th>Have you done this activity in the last 4 weeks?</th>
<th>Number of days in last 4 weeks</th>
<th>Minutes per day</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Sports</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Athletics</td>
<td>NO    Y</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Badminton</td>
<td>NO    Y</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Basketball</td>
<td>NO    Y</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Bowls</td>
<td>NO    Y</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Canoeing/Kayaking</td>
<td>NO    Y</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Climbing</td>
<td>NO    Y</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Cricket</td>
<td>NO    Y</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. Curling</td>
<td>NO    Y</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. Cycling (competition cycling)</td>
<td>NO    Y</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ACTIVITY</td>
<td>Have you done this activity in the last 4 weeks?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>----------</td>
<td>-----------------------------------------------</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Sport (continued)</strong></td>
<td><strong>NO</strong></td>
<td><strong>YES</strong></td>
<td></td>
</tr>
<tr>
<td>10. Dancing (ballet, jazz, modern, tap)</td>
<td>N</td>
<td>Y</td>
<td></td>
</tr>
<tr>
<td>11. Fishing/Angling</td>
<td>N</td>
<td>Y</td>
<td></td>
</tr>
<tr>
<td>12. Football</td>
<td>N</td>
<td>Y</td>
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<tr>
<td>13. Golf</td>
<td>N</td>
<td>Y</td>
<td></td>
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<tr>
<td>14. Gymnastics</td>
<td>N</td>
<td>Y</td>
<td></td>
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<tr>
<td>15. Hillwalking</td>
<td>N</td>
<td>Y</td>
<td></td>
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<tr>
<td>16. Hockey</td>
<td>N</td>
<td>Y</td>
<td></td>
</tr>
<tr>
<td>17. Horse Riding</td>
<td>N</td>
<td>Y</td>
<td></td>
</tr>
<tr>
<td>18. Ice Skating</td>
<td>N</td>
<td>Y</td>
<td></td>
</tr>
<tr>
<td>19. Judo</td>
<td>N</td>
<td>Y</td>
<td></td>
</tr>
<tr>
<td>20. Martial Arts</td>
<td>N</td>
<td>Y</td>
<td></td>
</tr>
<tr>
<td>21. Netball</td>
<td>N</td>
<td>Y</td>
<td></td>
</tr>
<tr>
<td>22. Powerboating/jetskiing</td>
<td>N</td>
<td>Y</td>
<td></td>
</tr>
<tr>
<td>23. Rowing</td>
<td>N</td>
<td>Y</td>
<td></td>
</tr>
<tr>
<td>24. Rugby</td>
<td>N</td>
<td>Y</td>
<td></td>
</tr>
<tr>
<td>25. Sailing/Windsurfing</td>
<td>N</td>
<td>Y</td>
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<tr>
<td>26. Shinty</td>
<td>N</td>
<td>Y</td>
<td></td>
</tr>
<tr>
<td>27. Skateboarding/Roller/inline skating</td>
<td>N</td>
<td>Y</td>
<td></td>
</tr>
<tr>
<td>28. Skiing/snowboarding</td>
<td>N</td>
<td>Y</td>
<td></td>
</tr>
<tr>
<td>29. Snooker/Billiards/Pool</td>
<td>N</td>
<td>Y</td>
<td></td>
</tr>
<tr>
<td>30. Squash</td>
<td>N</td>
<td>Y</td>
<td></td>
</tr>
<tr>
<td>31. Subaqua</td>
<td>N</td>
<td>Y</td>
<td></td>
</tr>
<tr>
<td>32. Surfing/body boarding</td>
<td>N</td>
<td>Y</td>
<td></td>
</tr>
<tr>
<td>33. Swimming</td>
<td>N</td>
<td>Y</td>
<td></td>
</tr>
<tr>
<td>34. Table tennis</td>
<td>N</td>
<td>Y</td>
<td></td>
</tr>
<tr>
<td>35. Tenpin bowling</td>
<td>N</td>
<td>Y</td>
<td></td>
</tr>
<tr>
<td>36. Tennis</td>
<td>N</td>
<td>Y</td>
<td></td>
</tr>
<tr>
<td>37. Volleyball</td>
<td>N</td>
<td>Y</td>
<td></td>
</tr>
<tr>
<td>38. Other (write in)</td>
<td>N</td>
<td>Y</td>
<td></td>
</tr>
<tr>
<td>39. Other (write in)</td>
<td>N</td>
<td>Y</td>
<td></td>
</tr>
</tbody>
</table>

**Physical Activity - Exercise**

| Have you done this activity in the last 4 weeks? |
|----------|-----------------------------------------------|
| **NO** | **YES** |
| 40. Keep fit/Aerobics | N | Y |
| 41. Use of multigym/weight training | N | Y |
1. In a typical week during term how many times do you take part in sport or physical activity at school or organised through the school? (write in the number)
   Lunch time ___ After School ___ Weekend ___

2. In a typical week during term how many times do you take part in sport or physical activity not organised through the school? (write in the number)
   Evenings ___ Weekend ___

3. In your school do you feel there are enough sports activities on offer....
   at lunch time? Yes [ ] No [ ]
   after School? Yes [ ] No [ ]
   at weekends? Yes [ ] No [ ]

4. In your neighbourhood do you feel there are enough sports activities on offer....
   In the evening? Yes [ ] No [ ]
   At weekend? Yes [ ] No [ ]

5. In my school or neighbourhood I would like to have the opportunity to take part in
   ________________________________ (sport/physical activity)

6. If you already take part in sports, or would like to take part, when would you prefer to do so?
   **At school** (please rank in order of preference with 1 being the most preferred)
   Lunchtime [ ] After school [ ] Weekend [ ]

   **Outside School** (please rank in order of preference with 1 being the most preferred)
   Evenings [ ] Weekend [ ]

7. Please tick which items you have and/or use in your home
   Sports equipment (football, tennis racket etc.) have [ ] use [ ]
   Skate board or roller/inline skates [ ] [ ]
   Bicycle [ ] [ ]
   Aerobic workout videotapes or home gym equipment [ ] [ ]
   Garden [ ] [ ]
Please tick box 1 if the following apply to the area near your home. Please tick box 2 if this influences (makes you do more or less!) whether you take part in sport or physical activity:

- Busy Roads
- Good street lighting
- Safe area
- Cycle paths/lane
- Enjoyable scenery
- Frequently see teenage girls taking part in sport or physical activity
- Frequently see young people standing around doing nothing
- Intimidating area

---

To what extent do you agree or disagree with the following statements? (tick one box for each):

<table>
<thead>
<tr>
<th>Statement</th>
<th>Strongly disagree</th>
<th>Disagree</th>
<th>Neither Agree nor disagree</th>
<th>Agree</th>
<th>Strongly agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Girls achievement in sport is not valued as much as boys achievement is in Scotland</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>I don’t think being good at sports is important</td>
<td></td>
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<tr>
<td>Most of my friends are into sport and physical activity</td>
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<tr>
<td>If I’m going to do some sport or physical activity I prefer to have a friend there</td>
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<tr>
<td>Keeping fit and healthy is not that important to me</td>
<td></td>
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<tr>
<td>I don’t find sport and physical activity enjoyable</td>
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<tr>
<td>Sport in this school is too competitive for me</td>
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</tr>
</tbody>
</table>

I take part in sport and physical activity at school because: (tick one box)
- I want to
- I have to

I take part in sport and physical activity outside school because: (tick one box)
- I want to
- I have to

To what extent do you agree or disagree with the following statements? (tick one box for each):

<table>
<thead>
<tr>
<th>Statement</th>
<th>Strongly disagree</th>
<th>Disagree</th>
<th>Neither Agree nor disagree</th>
<th>Agree</th>
<th>Strongly agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Girls sport is as important as boys sport in this school</td>
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<tr>
<td>It makes no difference to how I feel about myself if I’m active or not</td>
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</tr>
<tr>
<td>I don’t feel that I’m very good at sport</td>
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<tr>
<td>I worry about what I look like when playing sport or doing physical activity in front of others</td>
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</tr>
<tr>
<td>My mother participates regularly in sport or physical activity</td>
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<td></td>
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<td></td>
<td></td>
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<tr>
<td>My father participates regularly in sport or physical activity</td>
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</tr>
</tbody>
</table>

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Please consider how supportive each of the following have been of you taking part in sport and physical activity?

<table>
<thead>
<tr>
<th></th>
<th>Very unsupportive</th>
<th>unsupportive</th>
<th>Neither supportive nor unsupportive</th>
<th>supportive</th>
<th>Very supportive</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mother/Female Guardian</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Father/Male Guardian</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Coach</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>PE teacher</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Brother/Sister</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Friends</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Other</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

(Please state)

To what extent do you agree or disagree with the following statements? (tick one box for each)

<table>
<thead>
<tr>
<th>Statement</th>
<th>Strongly disagree</th>
<th>Disagree</th>
<th>Neither Agree nor disagree</th>
<th>Agree</th>
<th>Strongly agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enjoyment is one of the main reasons why I do sport or physical activity</td>
<td></td>
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<tr>
<td>I feel uneasy playing sport I’m not good at in front of other people</td>
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<tr>
<td>I don’t like other people to see how I look after I have been playing</td>
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<tr>
<td>Sport is important for girls in this school</td>
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<tr>
<td>I am still physically active even when my friends want me to do something else</td>
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<td></td>
</tr>
<tr>
<td>Friends tease me if I do sport or physical activity</td>
<td></td>
<td></td>
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<tr>
<td>It is important to me to be active as often as I can</td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>I still do sports and physical activity even if my friends won’t</td>
<td></td>
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</tr>
</tbody>
</table>

For each of the places below where you can exercise, please tick box 1 if it is nearby, within a 10 minute walk from your home or school. Please tick box 2 if you use this place to take part in sport or physical activity. Please tick box 3 if you think this place is one where you would like to go to for sport or physical activity

<table>
<thead>
<tr>
<th>Place</th>
<th>1 Nearby</th>
<th>2 Use</th>
<th>3 Like</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dance studio</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gym</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Sports Courts (basketball, tennis etc.)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Playing fields/pitches</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Public park</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Leisure centre</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Running track</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Skate boarding area</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Swimming pool</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Walking/hiking trails</td>
<td></td>
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</tr>
</tbody>
</table>

Would you like to take part more in sport? (tick one)

Yes □ No □

Would you like to take part more in other physical activity? (tick one)

Yes □ No □
To what extent do you agree or disagree with the following statements? (tick one box for each)

<table>
<thead>
<tr>
<th>Statement</th>
<th>Strongly disagree</th>
<th>Disagree</th>
<th>Neither Agree nor disagree</th>
<th>Agree</th>
<th>Strongly agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>I don’t have anyone to do sport or physical activity with</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>I am still physically active even if my friends don’t want me to be</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>My parents drive me to sport or physical activity whenever this is necessary</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>Although I don’t enjoy sport or physical activity I feel better after I have done it</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>I feel uneasy playing sport or doing physical activity in front of other people</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>I wouldn’t continue to do sport or physical activity if it didn’t help me manage my weight</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
</tbody>
</table>

Please read all five of the statements below and then tick the ONE that best describes your involvement in sport now. Do not include school PE/games lessons.

- I currently play sport at least once a week and have done so for longer than 6 months. □
- I am currently playing sport at least once a week but I have only begun doing so within the last 6 months. □
- I play sport occasionally (‘now and again’), but not on a regular basis □
- I do not play sport but I am thinking about starting in the next 6 months. □
- I do not play sport and I don’t intend to start playing in the next 6 months. □

I would take part more in sport and physical activity if ________________________________
________________________________________________________________________________
________________________________________________________________________________

Where I live is/is not (please delete) good for sport and physical activity because ________________________________
________________________________________________________________________________
________________________________________________________________________________
Appendix H: Study 4 interview guide
Case study interview guide

Introductions:
Inform participant of the nature of the investigation. Tell her that she will be asked about a variety of topics and to answer as openly and honestly as possible. There are no right or wrong answers. Inform her that the interview will be tape recorded but that her name will not be used in any future work or revealed to any other people. Ask if this okay. Ask the participant to sign the consent form.

1. Physical activity:
   - What sports and physical activities does the participant like to do?
   - Have the types of activity she enjoys changed over the past couple of years? How?
   - If her preferences have changed, why does she think this is so?
   - Does she feel that the amount of activity she does has changed over the past couple of years? If so, how?
   - What reasons can she think of for changes in the amount of activity she does?

2. Body Image:
   - How does the participant feel about the way she looks?
     Prompts: Does she like her appearance? Are there things about the way she looks that she doesn't like? Why does she have these concerns?
   - How has the way the participant feels about herself changed as she has gotten a little older?
   - Do worries about her appearance change the participant’s decisions over things to do? How?
     Prompts: Is there anything that they would like to do but don’t because of the way they look? Why does the way they look stop them doing these things? Are there things they would do differently if they felt better about the way they look?
   - Have any worries always been there or have they started since the participant got older?
   - Does she worry about how she looks when doing sports and activities?
     Prompts: Do thoughts go through her mind about the way she looks when she is being physically active? What sort of thoughts does she have?
   - Does she worry about what other people think of her and her appearance when doing activity? Who?
   - Are there any external factors that affect how she feels about herself and how she should look?
     Prompts: Do people like friends’ and family try to persuade her to look a certain way? How does that influence how she feels about herself? How do things like magazines and TV change how she feels about herself?

3. The Influence of family:
   - Does the participant consider her parents to be active?
     Prompts: What sort of things do her parents do? How much and how often?
   - How does she think her parents’ activity levels and choices affect her own activity?
   - Does the participant do any sports or physical activities with her parents?
   - Does she think this (either doing or not doing activity with parents) has any effect on her own activity? How?
   - Do her parents encourage her to be active or support her activity choices?
     What sort of things do they do to help?
• How does this change their activity?
• Do parent support styles differ between mother and father? How?
• What sort of support does each parent offer?
  Prompts: Financial, modelling, encouragement, etc
• Who does she feel to be the most influential parent? Why? How?

4. Influence of friends:
• Do the participant’s friends do any sport or activity?
  Prompt: What sorts of things do they do?
• Does the participant do sports or activities with her friends?
• How does this (doing or not doing activity with friends) change the participant’s activity?
  Prompt: Does having friends be active make it easier or more fun to be active? Is it more difficult to do things without friends?
• Do her friends try to persuade her to act in a certain way? If so, how do they think she should act?
  Prompts: Is there pressure from friends to do things different to what she would really like to do? What sorts of things do they want her to do? Do groups of friends make their decisions over what to do individually or at group level? Is it okay to challenge a group decision? What happens if it somebody does challenge the decision?
• If there is pressure, does the participant let it affect her behaviour? How?
  How does she feel about this?
• Does any pressure affect whether the participant does sports and activity or not? How? How does she feel about this?
• Among the participant’s group of friends, are there physical activities that are seen as appropriate or inappropriate for teenage girls? What are they?
• How do these group opinions alter the choices the participants makes about sport and activity?

5. Changing priorities:
• Has the participant’s views of activity changed since she was younger? How?
  Prompts: How does the participant feel about sport and physical activity now? How did she feel about it when she was younger? Can she see differences between the two times in her life?
• Have her priorities changed as she’s grown older?
  Prompt: What are the most important things in her life now? What were the most important things in her life when she was younger? How do the two compare?
• Does she enjoy sport and activity? Why or why not? Has this view changed or has she always felt this way?
• Are there other things the participant likes to do that stop her doing as much sport and activity as she would like?
• If so, what are these things? How do they interfere with her activity?
• Has she tried to solve the problem? How? What was the outcome? How does she feel about this?
• Are there other things the participant has to do that stop her doing as much sport and activity as she would like?
• If so, what are these things? How do they interfere with her activity?
• Has she tried to solve the problem? How? What was the outcome? How does she feel about this?
Appendix I: Study 4 student consent form
Student consent

I, ___________________________ understand that I have agreed to participate in a study conducted by Loughborough University about my experiences of physical activity.

I understand that I am being asked to participate in a discussion about my involvement in and enjoyment of sport, exercise and physical activity in and out of school.

I understand that all the information provided is strictly confidential and will be seen only by members of Loughborough University. I have also been told that my name and identity will not be used when you write or talk about the study in the future.

I understand that my involvement in the study is voluntary and I have been told that I am free to withdraw from participating at any time.

Your Signature: ___________________________ Date: ___________________________

Parent/carer consent

I give permission for my daughter, ___________________________, to be involved in a research project conducted by Loughborough University and the British Heart Foundation about her thoughts and opinions of sport and physical activity.

I understand that in giving consent for my daughter's involvement she will be asked to meet with a female researcher to discuss her involvement in and enjoyment of sport and physical activity, both in and out of school.

I understand that all information provided will be kept strictly confidential and that the name and identity of my daughter will not be revealed in any reports generated from the study.

I understand that all involvement in the study is voluntary and I that I am free to withdraw my daughter at any time.

Parent/carer name (please print): ___________________________

Parent/carer signature: ___________________________ Date: ___________________________

Should you have any questions about your involvement in the research project, please contact Sarah Whitehead (Tel: 01509 222757), email S.H.Whitehead@lboro.ac.uk).