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Physical Activity Awareness of British Adolescents

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Abstract

Objective—To assess adolescent PA awareness and investigate associations with biological and psychosocial factors.

Design—Cross-sectional from November 2005 to July 2007 (ROOTS study).

Setting—Population-based sample recruited via Cambridgeshire and Suffolk schools (UK).

Participants—N=799 (44% male, 14.5±0.5 years).

Main Exposures—Self-rated PA perception, self-reported psychosocial factors, measured anthropometry.

Outcome Measure—PA measured using accelerometry over five days. 'Inactive' defined as accelerometry-measured <60 min/day of at least moderate PA (MVPA). Associations between awareness (agreement between self-rated and accelerometry-measured active/inactive) and potential correlates investigated using multinomial logistic regression.

Results—70% of adolescents were inactive (81% of girls, 56% of boys, OR(95% CI) 3.41(2.41, 4.82)). 53% of all girls (63% of inactive girls) and 34% of all boys (60% of inactive boys) inaccurately rated themselves as active (over-estimators). Compared to girls accurately describing themselves as inactive (29%), girl over-estimators had lower fat mass (OR(95% CI) 0.84(0.70, 0.99)), higher SES (high vs. low 2.4(1.07, 5.32)), reported more parent-support (1.57(1.12, 2.22)) and better family relationships (0.25(0.09, 0.67)). Amongst boys accurately describing themselves as inactive (22%), over-estimators had lower fat mass (0.86(0.77, 0.96)) reported more peer-support (1.75(1.32, 2.30)) and less teasing (0.75(0.61, 0.92)).

Conclusions—A substantial number of adolescents believe themselves to be more physically active than they really are. They maybe unaware of potential health risks, and may be unlikely to participate in PA promotion programs. Increasing information of PA health benefits beyond weight control might help encourage behavior change.

The authors declare that they have no competing interests.

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Keywords

Physical activity; perception; awareness; correlates; psychosocial

Introduction

Insufficient physical activity (PA) is a risk factor for obesity and related metabolic disorders in youth [1] and is positively associated with mental health [2] and bone development [3]. Adolescence is an important period for promoting PA and preventing an age-related PA decline [4-7]. Recent reviews highlight the limited success of PA promotion in youth [8-10]; the reasons for this are largely unknown.

One hypothesis for the limited effectiveness of PA promotion is a lack of awareness of health behavior, such as a belief of being more healthy than reality [11]. Previous studies have shown that this misperception is relatively common for PA [9,12,13]; possibly because PA is a complex behavior where the threshold between healthy and unhealthy may be unclear [12]. People may not be aware of what healthy levels are, and changing health recommendations may play a role. Even if someone is aware of what contributes 'sufficient' PA, in order to accurately estimate their PA level they need to determine their activity intensity during different behaviors, quantify their activity of this intensity, and sum it over time.

Increased awareness may be a proximal effect of behavior change [14], but those who over-estimate their PA may see no need to change their behavior [12] and not be susceptible to PA promotion. Improving PA awareness may therefore be a crucial initial component of promotion campaigns, although few interventions consider this [9,12,15].

Associations between psycho-social, personal and behavioral factors and PA awareness have been examined in adults [12,16-18] and children, [13] but not adolescents. Most previous studies of PA awareness have focused on adults, and most have used questionnaires to assess 'true' PA levels [12,16-18]. These studies show that between 46% and 61% of inactive adults over-estimate their PA, and these over-estimators also tended to have more favorable anthropometric characteristics than those realistic about their inactivity [16-18]. A recent study of PA awareness using objectively-measured PA in children indicated that 80% of parents of inactive children (those engaged in <60 mins/day of moderate and vigorous PA (MVPA)) wrongly thought that their child was sufficiently active and 40% of inactive children over-estimated themselves [13]. Compared to parents who accurately described their children as inactive, over-estimators were more likely to have girls, a child with a lower fat mass or their children reported more parent- and peer-support [13]. Child over-estimators reported receiving more peer-support [13].

We aimed to examine adolescents' PA awareness using objectively-assessed PA, and to investigate associated biological and psychosocial factors.

Methods

Participants

Participants were 799 adolescents, recruited to the ROOTS study, described previously [19]; a longitudinal cohort study examining psychopathology during adolescence. Adolescents were assessed at baseline (14 years-old) (T0), and at 18 (T2) and 36 (T3) months post-baseline with repeat psychosocial measures. PA and body composition were assessed six months after baseline (T1), between November 2005 and July 2007.

At T0, 27 secondary schools from Cambridgeshire and Suffolk, UK were approached and 18 agreed to participate. Study information, invitation letters and parent and student consent forms were sent to parents via schools.

Of the 1185 baseline participants, 998 (84%) adolescents and parents completed postal informed consent for the T1 PA assessment and 931 (93% of those consenting) attended a testing session at school. All procedures were explained and participants could choose to decline all or any part of the study. ROOTS was approved by the Cambridge research ethics committee.

Anthropometry

At T1 height (Leicester height measures, Chasmors Ltd., Leicester, UK) weight and body composition (Tanita, type TBF-300A. Tokyo, Japan) were measured at school testing sessions. Validated and published equations were used to calculate fat mass (FM) from impedance [20] and expressed as fat mass index (FMI) (fat mass (kg)/height (m^2)) [21]. Age and gender were self-reported. Ethnicity was not presented due to homogeneity (92% white).

Objective PA measurement

PA was assessed using the validated Actiheart heart rate and movement sensor (Cambridge Neurotechnology, Papworth, UK) [22-24]. The Actiheart was attached to the torso and recorded movement data in 30-s epochs. Volunteers were instructed to wear the monitor continuously, including during sleep and water-based activities for the remainder of the testing day and then four consecutive days, including two weekend days. Participants returned the monitors to school for collection.

To find a MVPA cut-point comparable with the widely used Actigraph accelerometer, a comparison between the Actiheart and Actigraph 7164 was done in a separate group of adolescents who wore both a 7164 Actigraph and an Actiheart while walking and running on a treadmill under controlled conditions [23]. The laboratory study suggested a conversion factor of 5 (Actigraph counts = Actiheart counts x 5), which was confirmed in a free-living study of 254 12-17 year-olds [25].

After conversion a custom program removed: data recorded after 11pm and before 6am; periods of ≥60 minutes with continuous zero activity counts and days with <600 minutes of recording (the cut-off for a valid day). Participants with less than three valid days were excluded [26]. Time (min/d) spent in MVPA was derived using 2000 (Actigraph) counts/min

as the lower threshold [27,28]. participants were then classified as 'active' or 'inactive' using a threshold of an average of 60 min/d MVPA, according to British PA recommendations [29,30].

Self-rated PA

Self-rated PA was assessed at the beginning of the PA measurement session before any assessment of PA or body composition as follows; 'How physically active would you say you have been during this school term: very inactive, fairly inactive, not inactive/not active, fairly active or very active'. Four PA awareness groups were derived using objective- and self-rated PA (Figure 1 and 2).

Socio-economic status

The ACORN index (A Classification Of Residential Neighborhoods) was used as a proxy for socio-economic status (SES). The ACORN index is a postcode (zip code) based system which categorizes UK postcodes into five categories using 125 demographic and 287 lifestyle variables [31]. Where SES data was unavailable, the category closest to the mean score for the school was used. Categories were combined to represent low, middle and high SES.

Parent- and peer-support

Parent- and peer-support for PA were assessed by questionnaire[32] administered at T1. Responses were on a 5-point scale from 'never' to 'every day'. Composite peer- and parent-support scores were derived from four and five questions respectively. Confirmatory principal-component factor analysis was used to determine internal consistency; Cronbach's alpha was used to confirm suitability of the groupings (Parent: alpha=0.80; Peer: alpha=0.83). Peer teasing for not being good at PA and sports was assessed using one question, used in the original format.

Moods and Feelings

The Mood and Feelings Questionnaire (MFQ) [33], a 33-item self-report measure of depressed mood was administered at T0 and has validity as a screen for adolescents with unipolar depression [33]. Respondents rate their symptoms over the last 2-weeks and items are scored on a 4-point Scale (never/mostly/sometimes/never). A summed score was used; higher MFQ scores indicate increased risk for depression [34-36]. The internal consistency in this sample was high (Cronbach's alpha=0.96).

Friendship

This friendship-questionnaire completed at T0 assesses eight items on current friendship satisfaction such as happiness with number of friends [36]. A higher value represents a more positive score. Confirmatory factor analysis confirmed the suitability of a single-factor model and Cronbach's alpha was used to confirm the suitability of the grouping (alpha=0.74).

Family function

The short family assessment device (FAD) [37] is an adolescent-reported 12-item questionnaire measuring general family function, administered at T0. Items are scored on a 4-point scale (as above) and assess family wellbeing such as feeling accepted. A higher value represents a negative score. Confirmatory factor analysis confirmed the suitability of a single-factor model and Cronbach's alpha was used to confirm the suitability of the grouping (alpha=0.88).

Statistical analysis

Analyses were done using STATA/SE 11 (Statacorp, College Station, TX). Characteristics of those with missing data and between boys and girls were assessed using t-tests or chi-squared tests. Analyses were carried out separately for boys and girls due to sex differences in PA levels and psychosocial variables. All psychosocial variables were checked for collinearity, VIF statistics were <2.0.

Multinomial logistic regression was used to examine differences between inactive adolescents (over-estimators versus realistically inactive) and between active adolescents (under-estimators versus realistically active) for all potential correlates separately.

Multiple multinomial logistic regression was then used to assess the extent to which multiple factors influenced an adolescent's PA awareness, with 'Realistic Inactive' as the reference category, this analysis was also done with 'Realistic Active' as the reference category. Variables significantly different in the simple models (including interaction terms) were included in adjusted models and subsequently removed if they did not reach p=0.05. If more than one variable met these criteria, variables were removed one at a time, starting with that with the highest p-value. Analyses were adjusted for school-level clustering.

The main emphasis of this study is on differences between inactive adolescents (over-estimators and realistic inactive) as they are most likely to be targeted in PA promotion, although all groups are included in the models.

Results

Of those attending a testing session, 17 volunteers were not fully tested due to medical reasons or refusal to participate. Due to the late introduction of the perception questionnaire, 799 adolescents (86% tested at T1) are included. No significant differences were found by sex (p=0.69), weight (p=0.08), FMI (p=0.85) or MVPA (p=0.27) between those with complete T1 data and the 133 with missing data, however, those of lower SES (p=0.001) had more missing data.

Figures 1 and 2 show the classification of boys and girls into four PA awareness groups by objectively-measured and self-rated PA. 57% of boys accurately reported their PA (22% realistically inactive; 35% realistically active). Of the 56% of boys who were inactive, 60% over-estimated their PA (34% of all boys) (Figure 1). 42% of girls accurately reported their PA level (29% realistically inactive; 13% realistically active). Of the 81% of girls who were inactive, 65% over-estimated their PA (53% of all girls) (Figure 2). Compared to girls, boys

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were more likely to be realistically active (OR (95% CI) 3.50 (2.26, 5.42)) and less likely to be realistically inactive (0.29 (0.18, 0.44)) or to over-estimate their PA (0.23 (0.16, 0.33)).

Compared to realistically active boys, those under-estimating their PA had higher BMI and FMI and poorer mood (Table 1). When examining inactive boys, those over-estimating their PA did more MVPA, had higher BMI and FMI, reported higher peer- and parent-support, and lower teasing than those realistic about their inactivity. Of the active girls, those underestimating their PA were older, had higher FMI and reported more teasing and lower peer- and parent-support than those who were realistically active (Table 2). Inactive girls over-estimating their PA level had higher MVPA, SES, peer- and parent-support, friendship and better mood and family scores, but lower FMI and teasing than those realistically inactive. For girls there were significant interactions between SES and peer-support, FAD, friendship and mood (interactions for the simple models shown as eTable 1).

Table 3 shows results of the final models of multiple correlates on PA awareness. For inactive boys, these results were similar to the simple models. Compared to girls who were realistic about being inactive, those over-estimating their PA were more likely to be of higher SES, to report higher parent-support and to have a lower FMI and FAD; significant interactions between SES/peer-support and SES/FAD were also included in the final model for girls.

Discussion

Approximately 70% of these adolescents (81% of girls and 56% of boys) were not meeting PA guidelines of 60 min/day MVPA [29,30]. 65% of inactive girls and 60% of inactive boys wrongly thought that they were ‘active’.

PA levels were low, only 44% boys and 19% of girls were meeting recommendations. This is less than the 81% and 60% of 15 year-old boys and girls respectively who were shown to be meeting these recommendations in a recent European study [5], yet these British adolescents appear to be more active than the 11% and 3% of US boys and girls aged 12 to 15 shown to be meeting these guidelines [38]. Although this may indicate true differences, the results are not directly comparable due to different PA data preparation methods. The number of adolescents meeting PA guidelines depends on the cut-points used to define MVPA.

This is the second study investigating PA awareness in youth and the adolescents in this study appeared to be less aware than 9-10 year old children in the previous study, where 40% of inactive children perceived themselves as active [13]. This could be due to social desirability bias, being unaware of what constitutes ‘physical activity’ or that children in the previous study were more active. However, over-estimation in these adolescents seems to be similar to the 46% to 61% of inactive adults over-estimating their PA in previous studies [12,16-18].

Girls were more likely to over-estimate their PA than boys, possibly because social desirability bias may be more prevalent for girls as seen with dietary reports [39]. Compared to adolescents who were realistic about their inactivity, those over-estimating their PA level

had a lower FMI. This result supports previous evidence suggesting that over-estimators may assume that they are sufficiently active because of their favorable body composition [16,17,40].

Adolescents who over-estimated their PA level reported higher peer- and parent-support than those realistic about their inactivity and boys overestimating their PA reported less teasing than those realistic about their inactivity. Although these adolescents appear to be receiving support for PA, they have still been classified as 'inactive' so this does not necessarily mean that this activity is at recommended levels. Although more support appears to be associated with a lack of awareness, this support could confer other benefits, such as reduced risk of depressive symptoms [41]. For inactive girls, FAD and parent/peer-support were positively associated with over-estimation, this may be imitation of the familial and/or peer group pattern amongst relatively satisfied and well adjusted teenagers. Although parent- and peer-support are positive correlates of PA[42,43] our findings suggest that they may be associated with a lack of PA awareness. Therefore, intervention components targeting PA awareness may need to use different strategies than those directly targeting PA.

Our proxy SES measure appears to be important in relation to awareness among girls, but not boys. Significant interactions between SES/peer-support and SES/FAD were included in the final model for girls, supporting previous research that girls and those of lower SES tend to have 'higher' scores on measures of psychosocial difficulties. Within the realistic inactive group, peer-support/FAD scores were more positive for lower SES girls. Conversely for over-estimators, peer-support/FAD scores were more negative for girls of lower SES. Although unavailable, inclusion of individual SES indicators such as parental education would be useful to further explore this association between SES and PA awareness. Peer- and parent-support appear important in relation to awareness and as these associations appear to differ by SES, interventions aiming to target PA awareness via support should perhaps tailor strategies by SES.

Education regarding benefits of PA other than for weight control may play an important role in PA promotion among adolescents as there are additional health outcomes including features of the metabolic syndrome [1] and bone health [3] which are associated with youth PA and too much focus may have been given to the importance of PA for weight control relative to other benefits.

The majority of inactive adolescents over-estimate their PA level and may be less likely to want to increase their PA. Improving awareness could be an important component of adolescent PA promotion. Self-monitoring and feedback using pedometers may be effective to promote PA awareness [44,45]. To determine the most effective types of feedback and their effect on awareness and PA, further research studying changes in objectively measured PA behavior is needed [9,15]. More work is also required studying how improving awareness helps to increase PA, and whether it may improve intervention effectiveness.

Study strengths and limitations

We are unaware of any other studies assessing PA awareness in adolescents. This is especially important considering the PA decline observed throughout adolescence [6]

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suggesting this as a valuable time for PA promotion [9]. It is unknown how to best assess PA awareness, and the measure used here is the only one previously used in youth [13] and leaves interpretation up to the participant. Although responses may be influenced by awareness and knowledge of PA guidelines, we consider this measure appropriate for this population. Our results are somewhat dependent on the dichotomization of self-rated PA, specifically the classification of those answering 'not active/not inactive' as 'inactive' (12% boys, 19% girls). These adolescents were hypothesized to be ambivalent about their PA level and due to reporting bias, more likely to be inactive than active in reality. Further, due to the average objectively measured PA level in this group being 'inactive', participants identifying as similar to their peers were also most likely inactive. Study strengths include objective PA measurement to classify awareness. Objective data should more accurately represent 'true' PA than a questionnaire and should overcome correlated error from two self-reported datasets [46]. Our results rely on the thresholds used to determine active/inactive, however, results were similar when using 30 min/day MVPA to define active/inactive (eTable 2).

This is a cross-sectional analysis and we are unable to determine the direction of association and cannot infer causality. We must acknowledge the limitation that mood, FAD and friendship were measured six months before PA and they may have changed. There was some differential drop out, exacerbated by late introduction of the perception questionnaire with lower SES adolescents having more missing data, limiting generalisability. Cambridgeshire and Suffolk may not be representative of the whole UK and this group had slightly lower levels of overweight than adolescents from the East of England [47].

Conclusion

Most inactive adolescents wrongly consider themselves as sufficiently active and adolescents with a lower FMI inaccurately describe themselves as 'active'. PA awareness may be especially important when targeting PA promotion interventions for adolescent girls. Increasing awareness of PA health benefits beyond weight control, might reverse misperceptions and encourage behavior change.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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KC did the data analysis and drafted the manuscript. IG, DB and VJD were responsible for the baseline ROOTS study. KC, DB, RS, CR and UE organized and carried out the PA data collection. EVS and SG assisted with formulation of the research question. All authors contributed to, and approved the final version of the manuscript.

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		Objectively assessed physical activity	
		Active n=154 **(44.3%)** ≥ 60 min/d MVPA	**Inactive** n=194 **(55.8%)** < 60 min/d MVPA
Adolescent perception of physical activity	• Very active • Fairly active	Realistic Active (RA) n=123 (35.3%)	Over-estimator (OE) n=117 (33.6%)
	• Neither inactive or active • Fairly inactive • Very inactive	Under-estimator (UE) n=31 (8.9%)	Realistic Inactive (RI) n=77 (22.1%)

Figure 1.
Classification of 348 adolescent boys into four physical activity awareness groups by adolescent perception

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		Objectively assessed physical activity	
		Active n=85 **(18.9%)** ≥ 60 min/d MVPA	**Inactive** n=366 **(81.1%)** < 60 min/d MVPA
Adolescent perception of physical activity	• Very active • Fairly active	Realistic Active (RA) n=58 (12.9%)	Over-estimator (OE) n=237 (52.6%)
	• Neither inactive or active • Fairly inactive • Very inactive	Under-estimator (UE) n=27 (6.0%)	Realistic Inactive (RI) n=129 (28.6%)

Figure 2.
Classification of 451 adolescent girls into four physical activity awareness groups by adolescent perception.

Table 1

Characteristics of boys (n=348) by physical activity awareness group. Values are mean (SD) unless otherwise stated.

	Realistic Active (RA) N=123 Mean(SD)	**Under-estimator (UE) N=31 Mean(SD)**	**UE vs. RA* OR (95% CI)**	**Over-estimator (OE) N=117 Mean(SD)**	**Realistic Inactive (RI) N=77 Mean(SD)**	**OE vs. RI* OR (95% CI)**
Age (years)	14.5 (0.5)	14.5 (0.5)	0.66 (0.28, 1.59)	14.5 (0.5)	14.5 (0.5)	1.37 (0.26, 7.11)
MVPA ($min \cdot d^{-1}$)	89.3 (20.0)	82.3 (17.5)	0.98 (0.96, 1.01)	41.1 (12.0)	36.4 (1.8)	**1.03 (1.00, 1.06)**
BMI ($kg \cdot m^{-2}$)	20.1 (2.8)	21.6 (3.8)	**1.13 (1.04, 1.24)**	20.1 (3.1)	20.8 (4.0)	**0.92 (0.84, 0.99)**
Fat mass index ($kg \cdot m^{-2}$)	2.4 (1.6)	3.3 (2.2)	**1.25 (1.07, 1.45)**	2.5 (2.1)	3.2 (2.7)	**0.83 (0.75, 0.92)**
SES (%)						
High	79.8	20.2		57.9	42.1	
Middle	74.4	25.6	3.44 (0.61, 19.45)	62.2	37.8	0.68 (0.30, 1.50)
Low	90.9	9.1	2.54 (0.72, 8.99)	70.8	29.2	0.56 (0.21, 1.50)
Peer support	0.73 (0.94)	0.40 (0.92)	0.66 (0.43, 1.02)	0.22 (0.95)	−0.35 (0.98)	**1.77 (1.33, 2.35)**
Peer teasing	−0.14 (0.85)	0.06 (0.99)	1.33 (0.98, 1.81)	0.09 (1.04)	0.48 (1.17)	**0.73 (0.60, 0.91)**
Parent support	0.53 (0.99)	0.33 (1.04)	0.82 (0.55, 1.21)	0.10 (1.03)	−0.37 (0.94)	**1.58 (1.02, 2.45)**
FAD	0.017 (0.75)	0.04 (0.83)	1.03 (0.72, 1.45)	−0.08 (0.99)	0.15 (0.91)	0.75 (0.51, 1.11)
Friendship	0.03 (0.77)	0.17 (0.69)	1.31 (0.75, 2.28)	−0.08 (0.75)	−0.2 (0.73)	1.28 (0.79, 2.06)
Mood	12.0 (7.2)	15.9 (10.1)	**1.05 (1.02, 1.08)**	12.3 (8.2)	13.5 (8.9)	0.98 (0.94, 1.03)

* reference category. MVPA moderate and vigorous physical activity. SES, socio-economic status derived from home post-code (ACORN category) scored 1 lowest SES to 3 highest. Analyses clustered by school. FAD Family Assessment Device. Significant interactions present for girls between SES and peer support, FAD, friendship, mood. Significant interactions between SES and peer support, FAD, friendship, mood.

Table 2

Characteristics of girls (n=451) by physical activity awareness group. Values are mean (SD) unless otherwise stated.

	Realistic Active (RA) N=58 Mean(SD)	**Under-estimator (UE) N=27 Mean(SD)**	**UE vs. RA* OR (95% CI)**	**Over-estimator (OE) N=237 Mean(SD)**	**Realistic Inactive (RI) N=129 Mean(SD)**	**OE vs. RI* OR (95% CI)**
Age (years)	14.4 (0.50)	14.6 (0.10)	**4.03 (1.19, 13.68)**	14.6 (0.52)	14.6 (0.82)	0.92 (0.42, 2.00)
MVPA ($min \cdot d^{-1}$)	78.1 (16.0)	78.2 (15.8)	1.00 (0.98, 1.03)	36.6 (12.6)	31.9 (13.0)	**1.03 (1.01, 1.05)**
BMI ($kg \cdot m^{-2}$)	20.7 (2.7)	21.3 (2.3)	1.06 (0.99, 1.14)	20.7 (3.4)	21.6 (3.8)	0.93 (0.85, 1.02)
Fat mass index ($kg \cdot m^{-2}$)	5.0 (2.1)	6.0 (1.9)	**1.18 (1.03, 1.34)**	5.2 (2.4)	6.1 (3.0)	**0.88 (0.79, 0.99)**
SES (%)						
High	70.5	29.6		68.7	31.3	
Middle	65.0	35.0	1.08 (0.23, 4.95)	64.6	35.4	**2.90 (1.63, 5.14)**
Low	66.7	33.3	0.84 (0.30, 2.34)	39.5	60.5	**3.39 (2.12, 5.40)**
Peer support	0.07 (0.85)	−0.6 (0.85)	**0.40 (0.20, 0.76)**	−0.04 (0.84)	−0.60 (0.89)	**2.08 (1.64, 2.63)**
Peer teasing	−0.32 (0.57)	0.19 (1.31)	**2.00 (1.13, 3.54)**	−0.12 (0.88)	0.09 (1.12)	0.82 (0.66, 1.03)
Parent support	0.16 (0.80)	−0.69 (0.92)	**0.35 (0.18, 0.67)**	0.08 (0.88)	−0.55 (0.93)	**2.21 (1.72, 2.83)**
FAD	−0.07 (0.87)	0.24 (0.90)	1.42 (0.83, 2.43)	−0.20 (0.92)	0.15 (1.01)	**0.68 (0.55, 0.83)**
Friendship	0.09 (0.79)	−0.14 (0.72)	0.66 (0.42, 1.05)	0.04 (0.73)	−0.18 (0.77)	**1.48 (1.04, 2.12)**
Mood	17.0 (12.3)	19.0 (13.0)	1.02 (0.96, 1.07)	14.8 (9.5)	17.9 (10.5)	**0.97 (0.95, 0.99)**

* reference category. MVPA moderate and vigorous physical activity. SES, socio-economic status derived from home post-code (ACORN category) scored 1 lowest SES to 3 highest. Analyses clustered by school. FAD Family Assessment Device. Significant interactions present for girls between SES and peer support, FAD, friendship, mood. Significant interactions between SES and peer support, FAD, friendship, mood.

Table 3

Results of Multinomial Logistic Regression of multiple factors on adolescent physical activity awareness for boys and girls.

		OE (reference RI)		OE (reference RA)	
		OR	**95% CI**	**OR**	**95% CI**
Boys					
Fat mass index		0.86	0.77, 0.96	0.97	0.85, 1.11
Peer support		1.75	1.32, 2.30	0.55	0.40, 0.76
Teasing		0.75	0.61, 0.92	1.31	0.97, 1.76
N		117		117	
Girls					
SES	Low[#]				
	Middle	2.9	0.95, 8.74	3.8	1.51, 9.40
	High	2.4	1.07, 5.32	5.2	2.18, 12.2
Fat mass index		0.84	0.70, 0.99	1.03	0.89, 1.21
Parent support		1.57	1.12, 2.22	0.86	0.59, 1.26
Peer support		1.14	0.61, 2.14	1.04	0.43, 2.50
FAD		0.25	0.09, 0.67	1.15	0.59, 2.24
SES*Peer support	Low[#]				
	Middle	2.50	1.02, 6.05	0.88	0.21, 3.68
	High	1.41	0.63, 3.15	0.84	0.28, 0.25
SES*FAD	Low[#]				
	Middle	3.67	0.90, 15.0	0.82	0.32, 2.10
	High	4.04	1.45, 11.25	0.63	0.23, 1.68
N		237		237	

Reference category for analysis is Realistic Inactive (RI), Over-estimators (OE), Boys N=77, Girls N=129, or Realistic Active (RA) Boys N=123, Girls N=58, OR; Odds Ratio, 95% CI; 95% confidence interval. SES, socio-economic status derived from home post-code (ACORN category) scored 1 lowest SES to 3 highest

[#]reference category is low SES. FAD Family Assessment Device. Analysis clustered by school. Results from multinomial logistic regression across all four groups of physical activity awareness including N=348 adolescent boys and N=451 adolescent girls.