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## Original Research

# Perceptions and attitudes about body weight and adherence to the physical activity recommendation among adolescents: the moderating role of body mass index



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## ABSTRACT

**Objective:** We examined the associations between perceptions and attitudes about body weight and adherence to the physical activity recommendation (PAR) for adolescents to achieve  $\geq 60$  min/day of moderate-to-vigorous physical activity and tested whether body mass index (BMI) was a moderator of these relationships.

**Study design:** Cross-sectional survey.

**Methods:** Self-reported data from Canadian adolescents ( $n = 4299$ ) who participated in the 2013 Ontario Student Drug Use and Health Survey were analysed.

**Results:** Dissatisfaction with body weight was associated with lower odds of adherence to the PAR (odds ratio [OR]: 0.74; 95% confidence interval [CI]: 0.55–0.99). More specifically, those who perceived themselves as overweight/obese had lower odds of adherence to the PAR (OR: 0.59; 95% CI: 0.42–0.81) compared with those who think they were about the right weight. Those who were trying to gain weight were more likely to adhere to the PAR (OR: 1.92; 95% CI: 1.29–2.86) compared to those who were doing nothing about their body weight. BMI was a significant moderator of the association between dissatisfaction with body weight and adherence to the PAR. At low BMI, there were no differences in the adherence to the PAR between adolescents who were dissatisfied with their body weight or not. At high BMI, adolescents who were dissatisfied with their body weight were less likely to adhere to the PAR than those who were not dissatisfied with their weight. Results were not different between males and females.

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*Conclusions:* Results suggest that adolescents who are dissatisfied with their body weight have lower adherence to the PAR, particularly those who are overweight or obese.

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## Introduction

Physical activity (PA) plays an important role in optimising health and reducing the risk of obesity and other chronic diseases. Research has indicated that physical activity contributes to the regulation of body homeostasis, as it contributes to significant improvements in energy and macronutrient balance regulation and to global body functioning.<sup>1</sup> Physical activity positively affects body composition by increasing muscle and bone mass and decreasing fat mass, thus preventing obesity and related chronic diseases.<sup>2</sup> Regular physical activity has been indicated to benefit various body systems, such as cardiovascular, respiratory, musculoskeletal, nervous, endocrine and immune systems.<sup>3</sup> However, insufficient physical activity is one of the 10 leading risk factors for death worldwide.<sup>4</sup> Physical inactivity has been identified as the fourth leading risk factor for global mortality (6% of deaths globally).<sup>5,6</sup> Approximately, 3.2 million deaths each year are attributable to insufficient physical activity.<sup>7</sup> To derive health benefits, it is recommended that youth aged 12 to 17 years spend at least 60 min per day in moderate-to-vigorous PA.<sup>5</sup> However, globally, 81% of adolescents aged 11–17 years are not physically active enough.<sup>4</sup>

Exposure to unrealistic body ideal on both traditional (e.g. TV and magazines) and modern media (i.e. social networking sites, such as Facebook and Instagram) are known to negatively impact perception of body weight among adolescent boys and girls.<sup>8–11</sup> Perceptions of body weight have been identified as strong determinants of PA among adolescents.<sup>12</sup> Research has shown that dissatisfaction with body weight can act as either a motivator<sup>13,14</sup> or a barrier<sup>15–17</sup> to adolescents' PA. For example, Ingledew et al.<sup>14</sup> have indicated that adolescents who perceive themselves as overweight are more likely to exercise in order to lose weight than those who perceive themselves as normal weight. However, PA performed as a weight management strategy among people who have disordered eating may be compulsive and therefore related to more devastating health effects.<sup>18,19</sup> It is tied to a wide range of physical and psychological health consequences, including poor concentration, fatigue, depression, irritability, injuries, social isolation, and impaired relationships.<sup>18,20</sup> In contrast, negative perceptions of body weight can also serve as a barrier to PA.<sup>15,16,21</sup> This is mostly due to poorer psychological well-being, in this case social physique anxiety, which is the experience of anxiety in the presence of real or imagined negative physical evaluation.<sup>15,16</sup> As such, adolescents who are dissatisfied with their body weight and endure anxiety episodes would be less likely to engage in PA.

Actual body weight may be a potential moderator of the association between perceptions and attitudes about body

weight and PA among adolescents. Previous studies have shown that negative body image is associated with low level of PA among adolescents independently of body mass index (BMI). For example, Desmond et al.<sup>13</sup> found that perception of weight was a better predictor than actual weight of whether high school students dieted or exercised to control weight. Similarly, Kantanista et al.<sup>22</sup> recently indicated that body image was a significant predictor of moderate-to-vigorous PA in a sample of 14–16 years olds, regardless of BMI. However, none of these studies tested the moderating role of BMI with regards to adherence to the PA recommendation (PAR) among adolescents, thus limiting the interpretation of findings as it relates to perceptions and attitudes about body weight.

The present study examined the associations between perceptions and attitudes about body weight and adherence to the PAR among adolescents, and tested whether BMI was a moderator of these relationships. We hypothesised that dissatisfaction with body weight would be associated with lower adherence to the PAR and that this association would vary by BMI.

## Methods

### Study design and participants

Data were obtained from a provincially representative sample of middle and high school students who participated in the 2013 Ontario Student Drug Use and Health Survey (OSDUHS). The OSDUHS is a biennial repeated cross-sectional school-based survey of students in grades 7–12 (aged 11–20 years) who are enrolled in publicly funded schools across Ontario, Canada.<sup>23</sup> The survey collects information on a wide range of risk behaviours, including substance use, gambling, mental health, physical health, and delinquent behaviour. The OSDUHS uses a stratified (region by school level strata), two stage (school, class) clustered probability sample design. The schools and classes excluded from sampling include private schools, schools on First Nations reserves, on Canadian Forces Bases, and schools in geographically inaccessible northern areas, special education classes, English as a second language classes and classes with fewer than five students. All students who were in the selected classes who provided a signed consent form were eligible to participate. Students younger than 18 years provided signed parental consent in addition to their own signature of assent, whereas those aged 18 years and older did not require parental consent. A total of 42 school boards, 198 schools, and 671 classrooms participated in the survey. The student response rate was 63%, which is above average for a survey of students that requires active parental

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