Physical Self-Esteem of Adolescents With Regard to Physical Activity and Pubertal Status

Atahan Altintaş and F. Hülya Aşçı

The purpose of this study was to examine the physical activity and pubertal status differences in the multiple dimensions of physical self-esteem of Turkish adolescents. The current study also aimed to investigate the gender differences in the physical self-esteem. The pubertal status of participants was determined by a self-report questionnaire. The Children and Youth Physical Self-Perception Profile and a weekly activity checklist were administered to 803 adolescents (M<sub>age</sub> = 13.10 ± 0.93). Analysis revealed significant main effects of physical activity on the multiple dimensions of physical self-esteem for both boys and girls. Follow-up analysis indicated that physically active boys and girls scored higher on almost all subscales of physical self-esteem than less active counterparts. The main effect of pubertal status and physical activity × pubertal status interaction were not significant either for boys or girls. Analysis also revealed significant gender differences in perceived body attractiveness, physical strength, physical condition, and physical self-worth subscales in favor of boys (p < .05).

Adolescence represents the transitional period, marked by the emergence of new-found cognitive capacities and changing societal expectations, which profoundly shape and alter the nature of the self-esteem (28). Having positive self-esteem during adolescence period influences feelings of overall well-being, motivation, and emotional responses (27,28). Positive sense of self is central to the promotion and maintenance of psychological health and successful adaptation. Generally, self-esteem is accepted as an indicator of mental and social adjustment and a mediator of behavior. Adolescents who like themselves as persons will variably be quite cheerful, whereas the adolescents with low self-esteem will be affectively depressed (28). High self-esteem is associated with many positive attributes of leadership abilities, satisfactions, and social behaviors including low anxiety and depression and high academic and physical performance (21).

Physical self-esteem is considered to be an important psychological construct in adolescents overall self-esteem (22,56). According to Fox (22), “the physical self-esteem has occupied a unique position in the self-esteem system because the body, through its appearance, attributes and abilities provides the substantive interface between individual and the world” (p. 230). It has also been noted that physical self-esteem affects social communication and interaction (22). Indeed, a
highly valued perception of the physical self-esteem has emerged as particularly important to global self-esteem development (30).

Research in physical self-esteem has drawn heavily from multidimensional and hierarchical models of self-concept (37,50). Recently, a multidimensional hierarchical model has been proposed and supported in which global self-esteem is at the apex. Below that, at the domain level, physical self-worth or physical self-esteem is less enduring. At the subdomain level, specific and unstable dimensions of physical self-esteem and self-concept are theoretically closely correlated with objective measures of physical attributes and perceptions of ability (37).

With the development of multidimensional and hierarchical physical self-esteem model, research has clearly identified a significant association between physical self-esteem and number of health-related behaviors and emotions in adolescents (13,21,22). For example, physical self predicts physical activity (13,16,17,32), dietary behaviors (13,23), and social physique anxiety (13,14,40).

The importance of physical self-esteem in adolescents’ health and well-being have attracted the attention of researchers to study possible factors that might contribute to physical self-esteem. Physical activity has been frequently examined in association with the construct of physical self-esteem. Research with children and adolescence has consistently reported positive association between physical activity and physical self-esteem (12,25,46). In addition, Dunton, Jamner, and Cooper (16), and Dunton, Schneider, Graham, and Cooper (17) concluded that physical activity is an indicator of multiple dimensions of physical self-esteem in adolescents’ females. Most of these studies indicated that physically active adolescents have more favorable physical self-esteem than physically less active or inactive adolescents.

The process of physical self-esteem formation can certainly be influenced by physical growth and development during puberty. In this regard, the adolescent years constitute a unique developmental phase when rapid biological changes occur in an organism that is relatively mature cognitively (7). Puberty is the most salient developmental milestone during early adolescence and has important implications for the self-concept, body image, and psychosocial adjustment (6,9,18). Several studies have shown that pubertal development is related to physical self-esteem (1,20,57), with early developing females having a less positive body image than their on time and late-maturing peers. Among males, the opposite is true with early maturation being linked to a positive body image and late maturation being associated with dissatisfaction with the physical self-esteem. O’Dea and Abraham (44) also indicated that pubertal status was related to athletic competence and physical appearance with postpubertal males scoring highest on athletic competence and post-menarche females having lowest score on physical appearance. Similar findings also reported by Craft, Pfeiffer, and Pivarnik (11). Craft et al. (11) concluded that menarche status negatively related to physical competence, and girls who reached menarche have lower perceptions of athletic competence than girls who have not reached menarche. Adolescence is generally associated with an increase in body weight for girls. Early-maturing girls often have more body fat than other girls at their age, and the change in body shape might lead to negative feelings regarding their physical appearance (1,8).

Most of the previous studies that investigate the effects of pubertal status on physical self-esteem used the athletic competence and physical appearance
subscales of multidimensional self-esteem scales or body image questionnaires as an indicator of physical self-esteem. There are few attempts (17,40) to study the influence of physiological and biological changes that occur during adolescence period on physical self by considering the recent development of multidimensional and hierarchical model of physical self-esteem. Although two recent studies (42,43) used recently well-validated instruments of the Children and Youth Physical Self-Perception Profile (55) for testing the relationship between pubertal status and self-esteem, these two studies mostly focused on body image by using only body attractiveness and physical self-worth scales. Hence, the current study addressed one of the major limitations of the past research by focusing specifically on testing differences in multiple dimensions of physical self-esteem of Turkish male and female adolescents with regard to pubertal status. In addition, the current study could also have possible contribution to existing literature from a cultural perspective. Although the impact of physical activity and pubertal status on physical self-esteem of adolescents has been detailed in Western culture, few studies (4,24,25,46,48) have been conducted on non-Western and non-English-speaking cultures. Moreover, the previous studies on the relationship between physical self-esteem and physical activity (13,16,17) and pubertal status (11,40) have limitations of small sample sizes and of focusing on only female adolescents. The current study has also extended the notion of frequently reported gender differences in multiple dimensions of adolescents’ physical self in Western culture (29,36,54) to non-Western cultures or non-English-speaking countries such as Turkey. As Josephs, Markus, and Tafarodi (31) state, cultural norms that differ with respect to gender have an influence on the felt well-being of males and females. For example, in Turkey, the characteristics of sensitivity, nurturance, and interdependence are typically expected among females, whereas males are expected to be independent, autonomous, and superior to others. In addition, parents encourage their daughters to be dependent and obedient, whereas sons are allowed to be more aggressive and independent because they are expected to cope with the outside world (5).

Thus, the purpose of this study was to examine physical self-esteem of Turkish adolescents with regard to physical activity level and pubertal status. The effect of physical activity as a health-related behavior and pubertal status as biological factors on the multiple dimensions of physical self-esteem of Turkish adolescents were investigated. The current study also aimed to examine the gender differences in the physical self-esteem. It was hypothesized that pubertal status and physical activity would have significant effect on the multiple dimensions of physical self-esteem. Participants in high physical activity would score higher on all dimensions of physical self-esteem than low physical activity group. It was expected that postpubertal girls would have lower physical self-esteem scores than prepubertal girls, but the expectation is opposite for boys. In addition, based on the previous works, it was expected that boys would have higher physical self-esteem scores than girls.

**Methods**

**Participants**

A total of 803 secondary-school adolescents ($M_{age} = 13.10 \pm 0.93$), 383 girls ($M_{age} = 13.04 \pm 0.91$) and 420 boys ($M_{age} = 13.15 \pm 0.95$), with an age range of 11 to
14 years were enrolled in the current study. Participants were from five randomly selected public schools in Ankara, Turkey, representing middle-class adolescents. In addition, 96.6% of girls and 97.4% of boys regularly participated in 2 hours of physical education classes per week as a part of national curriculum.

**Measures / Demographic Questionnaire**

Information was collected regarding age, gender, weight, height, pubertal status, and pubertal age using a demographic questionnaire that was developed by researchers.

To ascertain pubertal status, a method frequently used in previous studies (11,40,43) was used in this study. For this purpose, a demographic questionnaire that consisted of specific gender-related puberty characteristics (for males: voice change, facial hair; for females: breast development, menarche), as well as common characteristics for both sexes (growth spurt, body hair), was used. Participants were asked to indicate characteristics that they had. In addition, the age of puberty was determined by asking, “How old were you when you felt such changes?” Self-reports of pubertal status have been shown to be accurate (10). Voice change and menarche were employed as pubertal maturation in boys and girls, respectively. The voice change occurs in the same stages of pubertal development as menarche in girls (Tanner Stage 3 and 4). Menarche and voice change are considered as the mark of the end of pubertal maturation. Pubertal status was considered as prepubertal and postpubertal or adult status depending on whether menarche or voice change occurred. Boys who reported voice changes with other biological changes (growth spurt and pubic hair changes) were considered as postpubertal or adult status coded as 1, whereas boys who did not report any changes or reported only growth spurt and pubic hair changes were accepted as prepubertal status and coded as 2. For girls, menarche with other changes was considered postpubertal or adult status (coded as 1), whereas girls who reported no changes or changes in pubic hair and breast development were taken into prepubertal status (coded as 2). Prepubertal boys and girls were those who had some biological changes and continued further biological changes but had not reached adult status.

**The Children and Youth Physical Self-Perception Profile (CY-PSPP)**

The Children and Youth Physical Self-Perception Profile (CY-PSPP, 55) is a 36-item inventory that has six scales designed to measure physical self-perception in four subdomains of physical self-worth (sport or athletic competence, attractive body adequacy, strength competence, condition competence), global physical self-worth, and global self-worth. The six scales represent a hierarchical arrangement of self-worth factors ranging from global self-worth through a global physical self-worth scale to the four specific physical self-worth subdomains. Each scale has six items that are scored using a 4-point structured alternative format. In this format, respondents are first asked to decide which side of a contrasting description is most like them (e.g., some kids are pleased with the appearance of their bodies, but other kids wish that their bodies looked in better shape physically). They are subsequently asked whether the description they selected is “sort of true” or “really true” for them. Items’ scoring ranges from 1 to 4, and subscale scores are reported
as the mean of the six items. The reliability and validity of the instrument was determined by Aşçı, Eklund, Whitehead, Kirazcı, and Koca (3). As suggested by Aşçı et al. (3), a five-items model was used to calculate subscale scores. Global self-worth scale was excluded from this study because the major focus was on the physical self-esteem.

**Weekly Activity Checklist**

Physical activity level was determined by the Weekly Activity Checklist (47). The Weekly Activity Checklist provides an activity list for the whole week. Children marked the activity types performed each day on the list. Duration of the activity was not considered in scoring, except all activities had to be at least 15 min. The activities are arranged in groups of low- (scored 3 METs), medium- (scored 5 METs), and high-intensity (scored 9 METs) activities. Six activities on the weekly activity checklist were classified as low intensity (walking, four-square, gymnastics, and volleyball), eight activities were classified as medium intensity (dancing, climbing, tennis, badminton, basketball, table tennis, and Frisbee), and the remaining nine activities were considered as high intensity (jumping rope, push-ups, jogging or running, soccer, skateboarding, ice skating, swimming, bicycling, handball, and aerobic step). The known MET level for each activity was multiplied by the frequency (number of days) of that activity and then summed. Thus, a physical activity score (MET) was calculated for each subject for a week. In the current study, the 1 week test–retest reliability was assessed with 81 schoolchildren (M age = 12.80 ± 0.88) as a pilot study. The obtained test–retest reliability coefficient for total MET score was 0.67, indicating an acceptable reliability of measurement. The 7-day physical activity recall has been studied extensively and has been validated against mechanical activity monitoring in adults and children (39).

**Procedure**

Consent was obtained from the Ministry of National Education and the administrations of the participating schools. Data were collected in physical education classes. Information was given to the participants about the study, and verbal and visual instructions about how to respond to questionnaires were provided to participants by researchers. Participants were classified as low (n = 358) and high (n = 390) physical-activity groups based on median split of MET/week values. The median MET/week scores were 66 and 86 for girls and boys, respectively. The median split method was used according to previous studies (25).

**Data Analysis**

A 2 × 2 (Physical Activity: High/Low × Pubertal Status: Pre/Post) multivariate analysis of variance (MANOVA) was used to test the effect of pubertal status and physical activity on the multiple dimension of physical self-esteem, and univariate follow-up F-tests were used to analyze any significant main and interaction effects. These analyses were conducted separately by gender. MANOVA was also used to test gender differences in multiple dimensions of physical self-esteem.
Results

Descriptive Statistics

Descriptive statistics for the study variables are presented in Table 1. In terms of pubertal status, 199 (52%) girls were in postpubertal status, and the remaining 184 (48%) were in prepubertal status. On the other hand, 44.8% of the boys ($n = 188$) had attained physical maturation but 55.2% ($n = 232$) of boys had not attained physical maturation. In general, 48.2% ($n = 387$) of the total 803 secondary school children were in the postpubertal status, and 51.8% ($n = 416$) of students were in the prepubertal status.

Gender Differences in Multiple Dimensions of Physical Self-Esteem

MANOVA results indicated overall significant main effect of gender on physical self-esteem ($\text{Hotelling's } T^2 = 0.05; F(5, 740) = 7.32; p < .01; \eta^2 = 0.05$). Follow-up univariate analysis indicate significant gender differences in three subdomains of physical self-esteem and body attractiveness ($F(1,744) = 10.15, p < .01; \eta^2 = 0.01$), physical strength ($F(1,744) = 31.41, p < .01; \eta^2 = 0.04$), physical condition ($F(1,744) = 12.50, p < .01; \eta^2 = 0.02$), and domain of physical self-worth ($F(1,744) = 12.09, p < .01; \eta^2 = 0.02$) in favor of boys (Table 1).

<table>
<thead>
<tr>
<th>Variables</th>
<th>Girls</th>
<th>Boys</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$M$</td>
<td>$SD$</td>
<td>$M$</td>
</tr>
<tr>
<td>Physical characteristics</td>
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<td></td>
<td></td>
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<td>8.79</td>
<td>154.36</td>
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<tr>
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<tr>
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<td>Physical strength</td>
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<tr>
<td>Total MET/week</td>
<td>82.69</td>
<td>67.61</td>
<td>103.56</td>
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</table>
Differences in Multiple Dimensions of Physical Self-Esteem With Regard to Physical Activity and Pubertal Status

Table 2 represents the means and standard deviations of the CY-PSPP subscales depending on physical-activity level and pubertal status of the participants. A $2 \times 2$ MANOVA was carried out for each gender separately to test differences in multiple dimensions of physical self-esteem between high and low physical activity group and between pre- and postpubertal participants. Significant multivariate main effects were found for only physical activity for both boys and girls (Table 3). On the other hand, main effect of pubertal status was not significant either for boys or girls. In addition, no significant multivariate two-way interactions were found for Physical Activity $\times$ Pubertal Status (Table 3).

The significant multivariate main effect of physical activity for girls can be attributed to four subscales including sport competence, physical condition, physical strength, and physical self-worth (Table 4). An inspection of the means reveals

<table>
<thead>
<tr>
<th>Subscales of CY-PSPP</th>
<th>Low Physical-Activity Group</th>
<th>High Physical-Activity Group</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$M$</td>
<td>$SD$</td>
<td>$M$</td>
</tr>
<tr>
<td>Sport competence</td>
<td></td>
<td></td>
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<td>Prepubertal</td>
<td>2.69</td>
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<td>3.09</td>
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<td>2.74</td>
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<td>3.05</td>
</tr>
<tr>
<td>Body attractiveness</td>
<td></td>
<td></td>
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<td>2.60</td>
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<td>2.65</td>
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<tr>
<td>Postpubertal</td>
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<td>2.63</td>
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<tr>
<td>Total</td>
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<tr>
<td>Prepubertal</td>
<td>2.56</td>
<td>0.74</td>
<td>2.84</td>
</tr>
<tr>
<td>Postpubertal</td>
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<td>0.64</td>
<td>2.95</td>
</tr>
<tr>
<td>Total</td>
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<td>0.69</td>
<td>2.91</td>
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<tr>
<td>Physical strength</td>
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<tr>
<td>Prepubertal</td>
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<td>Total</td>
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<tr>
<td>Physical self-worth</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Prepubertal</td>
<td>2.69</td>
<td>0.66</td>
<td>2.83</td>
</tr>
<tr>
<td>Postpubertal</td>
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<td>0.68</td>
<td>2.85</td>
</tr>
<tr>
<td>Total</td>
<td>2.68</td>
<td>0.67</td>
<td>2.84</td>
</tr>
</tbody>
</table>
that girl participants in the high physical-activity group had higher physical self-esteem scores than those in the low physical-activity group (Table 2). The highest physical activity differences include sports competence ($\eta^2 = 0.06$) and physical condition ($\eta^2 = 0.06$).

As can be seen from Tables 2 and 4, the significant main effects of physical activity for boys are because boys in the high physical-activity group have higher physical self-esteem scores on the subscales of sport competence, body attractiveness, physical condition, physical strength, and physical self-worth. In general, physically active boys regard themselves as more competent in various sport skills and as slimmer than less active counterparts. The $\eta^2$ values show that the highest effects can be found for sport competence, physical strength, and physical condition ($\eta^2 = 0.10$).
Discussion

This study was intended to examine the physical self-esteem of Turkish adolescents with respect to health-related behavior of physical activity and biological factors of pubertal status by using the cross-culturally validated multidimensional instrument. The study also aimed to examine the gender differences in physical self-esteem.

Consistent with the previous studies on Western cultures (33,36), Turkish boys consistently scored higher than Turkish girls in all subscales of CY-PSPP except sport-competence subscales. This result is supported by the gender differences studies, which indicated differences in the domain-specific self-esteem of females and males and also is supported by gender stereotypic lines (15,29,35). The tendency for gender differences at the domain and subdomain levels of physical self-esteem might occur because many of the self-esteem constructs at this level focus on the specific abilities and competencies such as endurance, sport competence, and strength whereby males are typically viewed as being more competent than females (58). The robust gender differences in the physical self-esteem might be explained by sex role socialization of esteem-enhancing skills, cultural expectations of what behavior is considered competent, and the availability of valued opportunities to demonstrate competent behavior (49). The stereotypical perspectives within society, cultural expectations, and differential opportunities to demonstrate competence might influence physical self-esteem of boys and girls. Traditionally, young girls and women have not been encouraged to pursue a physically active lifestyle. Stereotypical sex-role attitudes have socialized young girls to excel academic and social pursuit, whereas young boys are encouraged to achieve in physical activities. These factors might be some of the reasons for gender differences in physical self-esteem of Turkish adolescents because the cultural expectation and traditional roles are different for boys and girls in Turkey. The traditional gender roles and socialization values of Turkish girls are highly collectivistic, and girls are expected to care for their parents and never break off their close relationships with families, but the traditional roles of boys is more individualistic and more independent. Turkish boys are more self-oriented and make individualistic preferences for them, whereas girls are more conservative, and they do not behave freely or make their decisions independently. Parents encourage their daughters to be dependent and obedient, whereas sons are allowed to be more aggressive and independent because they are expected to cope with the outside world (5). The gender stereotyping of activities might be another reason for gender differences in physical self-esteem. Socialization in sport encourages men to participate in competitive sports to develop masculine aspects of their self-identity, whereas women are often discouraged from participating in competitive athletics for fear of “masculinizing” their physiques, attitudes, and behaviors (19). This socialization process is true for Turkish society. As in Western countries, although parents encourage girls to participate in competitive sports in Turkey, this is usually limited to sports characterized as aesthetically appropriate such as gymnastics and volleyball. That is why girls are less likely to be participants in types of sport in which the body is employed as an instrument in trials of strength with others or with the environment. On the other hand, consistencies between results of the current study and previous studies on Western cultures might be explained by the similarity in the way that media present how men and women should dress, appear, and behave.
It is interesting to note that there were no gender differences in perceived sport competence between Turkish boys and girls. Although girls have been stereotyped as less athletically competent than boys of the same age (52), in the current study, girls had similar perceived sport competence scores with boys. This could be explained by the high number of girls participating in the required physical education class. The required physical education class in Turkey generally focuses on skill development rather than the development of strength, endurance, and other biomotor abilities. Increasing opportunities and social acceptance for girls to participate in most sports in Turkey could be another reason for this result. Moreover, because of gender stereotypes in sports, it stands to reason that girls’ and boys’ physical self-esteem would be different, but girls and boys can participate in similar sport activities. Therefore, girls can increase their sport competence, and they might have approximate scores with boys.

As expected, physical activity had an effect on the multiple dimensions of physical self-esteem of boys and girls age 11 to 14. In particular, boys in the high physical-activity group scored significantly higher on all physical self-esteem subdomains and domain than boys in the low physical-activity group. On the other hand, high and low physically active girls differ on almost all subdomains of physical self-esteem except body attractiveness. The result indicated that participation in outside school physical activities such as rope jumping and volleyball cause the differences in perceived competence and body appearance. Consistent with the previous findings (4,12,16,17,25,46), participants who engaged in more physical activity after school and during their free time evaluated themselves more positively in terms of different domains of physical self-esteem. This result concurs with perceived competence motivation theory (26) and Sonstroem’s psychological model for physical activity participation (51) upon which much self-perception research has been based. The role of physical activity is also consistent with the bidirectional relationship between physical activity and self-esteem as proposed by Sonstroem, Harlow, Gemma, and Osborne (53). The physical activity differences in physical self-esteem could be explained by differences in subjective task values and expectancy beliefs regarding physical activity (59). The current findings should be interpreted by considering the limitations of using self-report measures of physical activity assessment and cross-sectional nature of the design. Despite limitations in the use of self-report measures of physical activity, it does have some advantages. It is relatively inexpensive, and at present it is the only method feasible to large population surveys. Specific activities can be identified together with frequency and duration. The procedure does not influence respondents’ activities to the extent that can occur with observation or diary keeping (41).

Lack of significant differences in the perceived body attractiveness between high and low physically active girls could be explained by feelings of alienation from being unable to conform to a desired physique and conflict between sport participation and ideology of femininity (2). This finding could also be supported by having less discriminated function of body attractiveness for physical activity of girls (25).

Inconsistent with the hypothesis of this study, no significant differences were obtained in dimensions of physical self-esteem with respect to pubertal status of girls and boys. This finding indicated that attaining maturational milestones and changes in biological and physical characteristics is not critical for physical self-
esteem of adolescents. The current study results were not in line with what would be expected based on earlier research that used multidimensional self-esteem scales and body-image questionnaires (1,11,20,44,57). The finding was also inconsistent with the previous studies that used specific physical self-esteem instruments (40). In addition, the finding of no significant pubertal status differences in physical self-esteem of girls contradicts the ideas of Page and Fox (45) that increased fat storage in the hips, thighs, and buttocks might be the cause of falling body image in adolescent girls. This finding should be carefully interpreted because there was no information about the body compositional changes of adolescents. The current results are consistent with previous research carried out in Turkey (24,48), which has found no effect of pubertal timing on perception of self and no differences in multiple dimensions of self among adolescents at different pubertal status. In addition, the results of Benjet and Guzman (6) on Mexican adolescents and Murdey et al. (43) on British adolescents supported the findings of this study. Benjet and Guzman (6) reported that menarche did not directly influence self-esteem of girls irrespective of their pubertal changes. Furthermore, Murdey et al. (43) did not find any significant association between self-reported pubertal status and body image (perceived attractiveness, global physical self-worth, and global self-worth). The reason for this unexpected finding is unclear. One of the possible explanations might be the self-report measures of pubertal status and differences in absolute pubertal status between participants. The changes in body composition might vary according to the stage of pubertal development and gender (43). The findings of McCabe and Ricciardelli (38) might be another possible explanation of the results of this study. The pubertal development has a minimal effect in comparison with the sociocultural variables, and its influence might be mediated by sociocultural variables such as messages about adolescents’ bodies from parents, peers, and media (38). The message provided to adolescents about their bodies and physical abilities might be influencing the body image or perception of psychomotor abilities rather than pubertal development. The maturational deviance hypothesis (9) might be another possible explanation for the unexpected results. As suggested by maturational deviance hypothesis, adolescents who are off-time (early or late) in their pubertal development with respect to peers experience are more stress and more vulnerable to adjustment problem. The detrimental effect of puberty on self-esteem can result if changes occur at too early an age, if one is off-time in terms of normal pubertal development (28). In this study, the focus is not on whether adolescents are early or late matured. The dissimilarity between the results of the current study and previous studies could be explained by the interaction of biological and cultural domains as the individual progress from childhood through adolescence (34). The methodological issues that must be considered as the procedures for assessing puberty might influence the consistency of findings across studies. In the published studies, different measures of pubertal development were used making it difficult to evaluate overall effect of pubertal status on physical self-esteem of adolescents. In some studies, self-report measures were used. In some other studies, interview process or physiological measures were used to determine the pubertal status.

A major limitation of this study was its inability to determine the causal direction of the relationship between physical self-esteem and health-related behavior of physical activity and biological changes. The cross-sectional nature of data makes it impossible to determine the directionality of the relationship
between physical activity, pubertal status, and physical self-esteem. Because of the cross-sectional study design, conclusions about the effects of physical activity and pubertal status on physical self-esteem cannot be made. Furthermore, the way that pubertal status was estimated is another limitation. Adolescents in the current sample only reported biological changes that they had at the time of study. There was no information regarding which adolescents were early or late matures relative to peers. The exploration of this question requires a longitudinal approach to track the development of puberty and sociocultural variables in relation to physical self-esteem, and future research needs to follow adolescents’ health-related behaviors and biological changes.

In summary, identifying the relationship between physical activity and physical self-esteem might provide important information to those involved with interventions and physical-activity program promotion. Physical education teachers, school counselors, and other health professionals could use this knowledge for developing intervention strategies aimed at increasing children’s physical activity participation and steer away from teaching styles and motivational climates that could harm adolescence self-esteem and negatively affect their participation.

References