



# The Impact of Adolescent Idiopathic Scoliosis on the Emotional Body Image of High School Girls

Jacobson RG\*

### Abstract

It is difficult to deny that Adolescent Idiopathic Scoliosis (AIS) has a major impact on the lives of those who are affected by this condition. AIS are defined as the lateral curvature of the spine that occurs in adolescence without an apparent cause. This condition affects the population substantially, as it is evident in as many as four out of one-hundred adolescents, but the majority of cases are minor, so they do not require treatment because the spine straightens itself with growth. Additionally, this condition is more common in females than males, which is why this paper focuses on females. AIS can impact a person in numerous aspects of daily life-ranging from sleep to physical activity-which highlights the importance for attention paid to AIS patients.

### Keywords

Adolescent idiopathic scoliosis (AIS); Adolescence; Treatment

## Introduction

It is difficult to deny that Adolescent Idiopathic Scoliosis (AIS) has a major impact on the lives of those who are affected by this condition. AIS are defined as the lateral curvature of the spine that occurs in adolescence without an apparent cause [1]. This condition affects the population substantially, as it is evident in as many as four out of one-hundred adolescents, but the majority of cases are minor, so they do not require treatment because the spine straightens itself with growth [1]. Additionally, this condition is more common in females than males, which is why this paper focuses on females [2]. AIS can impact a person in numerous aspects of daily life-ranging from sleep to physical activity-which highlights the importance for attention paid to AIS patients. Because the spine is connected to other vital bones in the human body, such as the rib cage, the curvature of this part of the body has an echoing impact. As a result, the positions of the body's bones are altered along with the internal organs held in place by these bones. Clearly, AIS has a monumental influence on bodily function, which warrants further research concerning this topic. Emotional body image is defined as one's personal feelings toward the physical condition of one's body. A poor emotional body image has lasting effects on a person's mind, as it can lead to conditions like depression, anxiety, and eating disorders [3]. The

severity of the topic of emotional body image justifies further research of this issue, especially since AIS can have such an immense effect on a person's physical condition, which can impact a person's emotional body image.

## Formulation of the Research Question

During adolescence, many girls are dealing with Adolescent Idiopathic Scoliosis. Although most cases correct themselves with growth, some may not be this fortunate. At this pivotal time in their lives, adolescents may view this diagnosis and treatment as equitable to the end their of social lives. Since the moment of diagnosis on, some girls may never feel completely comfortable with their bodies, as it is not easy to be confident with spines that are curved to a significant degree. Emotional body image should be acknowledged in AIS treatment, as it may seem obvious that a person's body image will be affected by this condition, but attention is only ever paid to physical condition because that is normally the main concern for doctors. In the current pool of research, it is evident that sources attempted to find the impact of AIS on body image, but the data gathered in these studies were ultimately misaligned with area of inquiry because of the methods used; the Trunk Appearance Perception Scale (TAPS), a series of increasingly deformed silhouettes with which patients compare themselves and indicate the gure to which they believe they look the most similar, was the most commonly used tool. Studies conducted by a team of researchers in Poland, Misterska et al. [4], used the TAPS to research patients with AIS, including the body image of patients being treated with a brace, scoliosis-related anxiety, trunk deformity perception, and stress level [5,6]. Although these papers are similar to the topic, none directly address the topic because they do not study emotional body image and AIS. Further, the only study directly related to research topic limited the test group to patients who were being treated with back braces, whereas this study focuses on all high school girls, whether or not they were treated with a brace. Also, these studies utilize an illogical tool, the TAPS, to analyze the body image of participants in certain studies, which further warrants the research. Because there were no sources that exactly covered this topic, the following research question was formed: To what extent does having Adolescent Idiopathic Scoliosis impact the emotional body image of high school girls?

## Hypothesis

The hypothesis for this research question is that Adolescent Idiopathic Scoliosis causes high school girls to have a poorer emotional body image than those who do not have AIS. This hypothesis is logically sound because AIS has such a great impact on the shape of the body, it is reasonable to hypothesize that it affects emotional body image..

## Literature Review

### The mental impact of brace treatment

In order to uncover the impact that AIS has on the emotional body image of high school girls, there first must be an understanding as to how AIS affects the mental status of patients with this condition broadly of the limited studies on the mental condition of AIS patients are significant in this small pool of research [5-7].

\*Corresponding author: Rebecca G Jacobson, AP Capstone Research Projects, Randolph High School, 20 Center Grove Road, Randolph, New Jersey, United States, Tel: +9735909876; E-mail: beccajacobson7@gmail.com

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Both Misterska et al. [5] utilize the Spinal Appearance Questionnaire, a pictorial scale similar to the aforementioned Trunk Appearance Perception Scale in order to collect data concerning AIS patients being treated with a back brace. Schweiger's purpose was to evaluate psychosocial well-being, in particular body image and quality of life (QOL), and brace wear adherence in female "AIS patients undergoing brace treatment" [7]. The aim of Misterska's et al. [5] study was "to investigate the level of agreement in the field of concerns and perceptions of spinal appearance in relation to brace and scoliosis-related data between parents and female patients with AIS, treated with a brace" [4]. Although the studies have entirely different focuses, they both make use of the Spinal Appearance questionnaire, highlighting its versatility in this field. Also, both studies investigate the mental status of patients undergoing back brace treatment, which emphasizes the importance of this research. The works of Glowacki et al. [6] and Schweiger et al. [7] also intend to uncover the impact that AIS has on the mental conditions of patients undergoing brace treatment, although Glowacki's et al. [6] study is specific to anxiety. This relates to Schweiger's et al. [7] work since anxiety undoubtedly has an impact on the quality of life of a person. Glowacki's et al. [6] study suggests, "special attention should be paid to patients' emotional reactions later on as brace-wearing continues". Both of these studies acknowledge that the mental impact of AIS is often neglected because the physical impact that the condition has on the body is prioritized over mental health, but the mental effects should not be overlooked because they can cause problems that are just as threatening as the physical effects. These sources collectively agree that there is a relationship between wearing back braces for AIS and the mental condition of patients. The authors utilize similar techniques to prove hypotheses concerning varying facets of the mental influences that AIS has on patients, demonstrating that there is more to be studied within this subject. Additionally, all of these sources recognize that the mental impact of AIS has been neglected in the past.

### Personal accounts of adolescent idiopathic scoliosis (AIS)

Although there are few empirical studies assessing the relationship between emotional body image and AIS, there are a multitude of personal accounts from adults reflecting on their experiences with AIS that support the idea that AIS directly causes a person to have a poor emotional body image. These sources provide valuable information in understanding the way that people are emotionally affected by this condition through the articulation of patients' thoughts. Tammie, Rachel and Leah are personal accounts of the negative effect that AIS has on emotional body image [8-10]. Within these sources, the idea that the treatment for AIS negatively impacted the authors' emotional body image is obvious. Tammie [8] narrative explains that "(w)earing a back brace was tantamount to a death sentence... My loathing of my body increased, and I refused to leave my house with it on" [8]. The views of Leah [10] are similar to Tammie in that Leah thought "it was impossible to feel pretty or cool when (she) was wearing that brace, (She) felt hollow and insecure" [10]. Clearly, the self-confidence of the two authors was damaged substantially by their experiences with AIS and back braces treatment. Rabkin-Peachman demonstrates the feelings of the previously mentioned authors as well because when she struggled with AIS, she "(hid her) body in extra layers (and skipped) sleepovers to avoid changing in front of others" [9]. Avoiding social situations due to a spinal deformity and its treatment demonstrates the importance of this issue and justifies further exploration of this

topic. These sources go further than discussing each author's feelings associated with AIS; they discuss how the symptoms of AIS are not just physical, and the mental impacts that come along with it cannot be ignored. Not only

Does AIS cause poor "Body image, but (it also causes) all of the stress and pain associated with medical appointments, bracing, or surgery; If body image disturbance persists and significant depression exists, the support of a therapist can also be helpful" [9]. The author's recommendation for AIS patients reveals the severity of the problems that can occur mentally from this condition. Another way to lessen the mental effects of AIS that friends and family can do is to "Remind (patients) of their beauty... Talk about the situation to gauge where they are emotionally. Do not remain silent and pretend the pain doesn't exist" [10]. It is imperative that these problems be addressed in order to minimize the toll they take on AIS patients. Rabkin-Peachman overcomes these problems by "[re]minding herself how far (her) body has come: It gave birth to two daughters. And they deserve a role model who is proud of her body, and herself" [9]. Although AIS causes more than just a curved spine, it is possible to overcome these issues. Because the mental effects of AIS can be extremely severe, it is important that there be a wealth of research and knowledge on this topic. These personal accounts illustrate how AIS is not only about one's physical condition, but also about one's mental and emotional condition. The authors of these narratives explain that the mental impacts of AIS cannot be ignored and suggest ways to help patients to overcome these obstacles. The severity of the impacts from AIS warrants further research on this topic in order to empirically prove the causal-comparative relationship between AIS and emotional body image.

### The body perception of patients with adolescent idiopathic scoliosis (AIS)

Not to be confused with emotional body image, body perception is defined as how one thinks that he or she looks physically. In the existing research, most sources concern body perceptions of patients with AIS. The most relevant of these studies are Rigo, Paolucci et al. and Merenda et al. [11-13]. The three sources agree that the deformity of the spine cannot always be measured by the curvature of the spine because every patient has a different body. The common method used to quantify the curvature of the spine inside the body is the Cobb method, which "is the measurement of the angle formed when two perpendicular lines are drawn on an x-ray from the superior endplate of the upper-end vertebrae and the inferior endplate of the lower-end vertebrae of the curve" [13]. Merenda's et al. [13] study explains that it is more complicated to uncover a patient's perceptions of his or her body than to measure his or her spine's curvature because "(t)he evaluation of idiopathic scoliosis cannot only be related to the measurement of the Cobb angle and a particular frontal plane curve pattern classification. The Cobb angle is a valid parameter to identify the deformity but is insufficient, considering the complexity of this condition" [11]. Because the physical deformity on the outside of a patient's body cannot be measured by the severity of the condition of a patient inside her body, other scales are used to measure the outward deformity. Instead, the previously mentioned Trunk Appearance Perception Scale is used to measure external deformity. Paolucci et al. [12] used the TAPS scale in his study "to evaluate the perception of trunk appearance and body self," which ultimately indicates participants' body perceptions [12]. These studies agree that

the body perceptions of patients with scoliosis believe that they have more exaggerated spinal deformities than they actually do, further proving that Cobb angle cannot be used to determine a patient’s body perception.

The sources of Merenda et al. [13], Rigo [11], and Paolucci et al. [12] indicate that body perception can be more complicated than the physical condition of one’s exterior appearance; the intricacy of this topic warrants further research and attention in this area. Because patients with AIS experience more than just a physical change inside their bodies, it is imperative that attention be paid to the other effects that result from AIS.

**Method**

**Causal-comparative method**

The research method that was used to uncover the impact that Adolescent Idiopathic Scoliosis (AIS) has on emotional body image was the causal-comparative method. This method is appropriate for this research because “(c)ausal-comparative designs generally involve the use of pre-existing or derived groups to explore differences between or among those groups on outcome or dependent variables” [14]. This method was first considered because it is commonly used by researchers in this field, like Misterska’s et al. study concerning patients with AIS and body image [5]. This method was the most appropriate for this research because the test groups that voluntarily and anonymously participated in the study were high school girls who have AIS and high school girls who do not have AIS, which are pre-existing test groups. The test groups were comprised of only girls in one high school so as to produce unskewed data. The study examined the differences in emotional body image between the test groups and further indicating use of causal-comparative research. To test hypothesis that AIS causes a poor emotional body image in high school girls, a survey was administered that consisted of three parts (Table 1), and it was conducted in one session in order to eliminate biased answers from the discussion of the survey among participants who had already taken the survey with others who had not. This method can be replicated on any test group, or it may be used on the same test group in order to reinforce the conclusions reached in this paper.

**Survey**

The first part of survey was a series of ten statements that involved body image, and participants chose one of four options: strongly agree, agree, disagree, and strongly disagree. For the final two statements on the survey, participants were asked to explain their answers. This was

included in the survey in order to collect qualitative data since the rest of the data are quantitative. The ten statements included in the survey were inspired by personal accounts of AIS and how patients’s emotional body image is affected by this condition (Table 1) (Figure 1).

The next part of survey was an exact copy of the aforementioned Trunk Appearance Perception Scale (TAPS). To prevent bias, participants received the second section of the survey after handing in the first section. For this portion, participants were directed to indicate the figure to which they look most similar. The reason for including the TAPS was to see if there were any conclusions to be made based off of the participants’s body perceptions in relation to their answers in the first section of the survey.

The final section was handed to participants after the first and second sections were submitted. This part asked participants to indicate whether or not they had AIS. The only options to answer this question were “yes” or “no,” and the purpose of this question was to separate each participant into her respective test group. This question came last so that the girls taking the survey would not initially know that the survey was about AIS to prevent bias.

Each part of the survey was numbered in a way that each participant would have the same number on each page of the survey, yet she would not reveal her name to keep the survey anonymous. The research goal was to combine the three parts of the survey by participant so that the answers of the first and second sections could be categorized by whether or not the participant has AIS.

**Results**

**Quantitative results**

The final sample size of this research consisted of thirty-four high school girls, twenty-two of which did not have Adolescent Idiopathic Scoliosis (AIS) and twelve of which had Adolescent Idiopathic Scoliosis (Table 2).

**Body satisfaction:** Out of thirty-four participants, twenty-nine high school girls agreed or strongly agreed with this statement: “I feel self-conscious about my body”. Ten of these participants had AIS while nineteen of these participants did not. This means that 86% of non-scoliosis participants felt self-conscious about their bodies, while 83% of girls with AIS felt self-conscious about their bodies. In total, 85% of all participants felt self-conscious about their bodies. This information indicates that whether or not a high school girl has AIS, she may be self-conscious about her body. Because there is little disparity between the body satisfactions between the test groups, this

Table 1: Causal-comparative method.

Indicate if you strongly agree, agree, disagree, or strongly disagree with the following				
I feel self-conscious about my body	Strongly Agree	Agree	Disagree	Strongly Disagree
I feel that others are judging my body	Strongly Agree	Agree	Disagree	Strongly Disagree
I am satisfied with my body	Strongly Agree	Agree	Disagree	Strongly Disagree
I wish my body were more proportionate	Strongly Agree	Agree	Disagree	Strongly Disagree
I am jealous of the appearance of others’ bodies	Strongly Agree	Agree	Disagree	Strongly Disagree
I do not wish to change anything about my body	Strongly Agree	Agree	Disagree	Strongly Disagree
I wish I could change certain aspects of my body	Strongly Agree	Agree	Disagree	Strongly Disagree
I spend a lot of time thinking about my body’s appearance	Strongly Agree	Agree	Disagree	Strongly Disagree
I try to hide my body with clothes	Strongly Agree	Agree	Disagree	Strongly Disagree
I feel self-conscious about my torso specifically	Strongly Agree	Agree	Disagree	Strongly Disagree
Indicate yes or no:				
Do you have scoliosis? Yes or No				

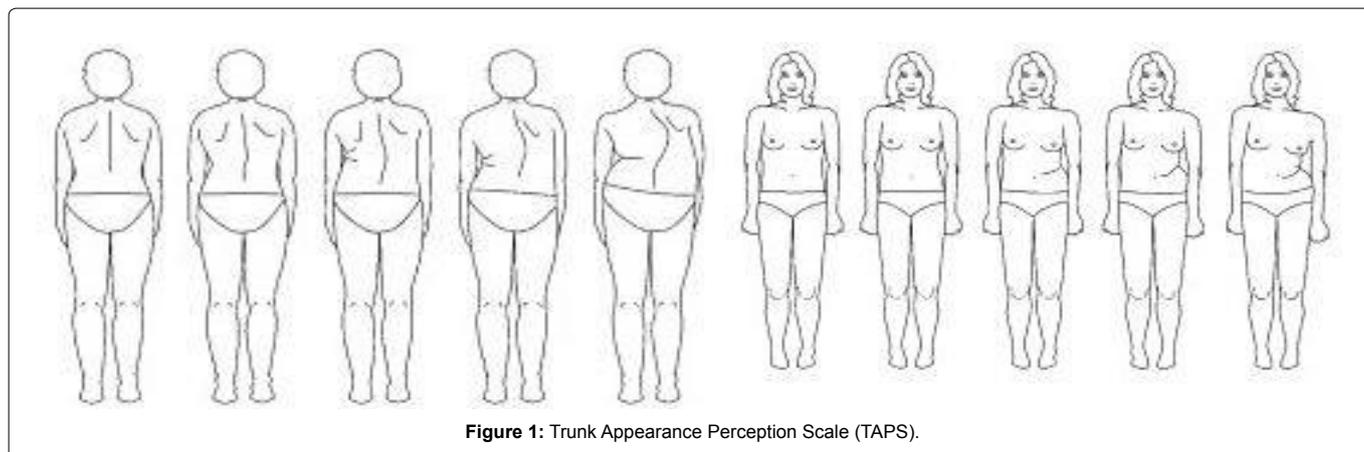


Figure 1: Trunk Appearance Perception Scale (TAPS).

Table 2: Quantitative results of survey on Adolescent Idiopathic Scoliosis (AIS).

	I feel self-conscious about my body	I feel that others are judging my body	I am satisfied with my body	I wish my body were more proportionate	I am jealous of the appearance of others' bodies	I do not wish to change anything about my body	I wish I could change certain aspects of my body	I spend a lot of time thinking about my body's appearance	I try to hide my body with clothes	I feel self-conscious about my torso specifically
Total Strongly Agree	8	3	1	7	19	0	16	7	4	7
Total Agree	21	20	7	20	10	1	17	19	12	17
Total Disagree	4	9	25	7	5	19	1	8	13	8
Total Strongly Disagree	1	2	1	0	0	14	0	0	5	2
Total Strongly Agree (no AIS)	5	3	1	5	10	0	10	6	3	4
Total Agree (no AIS)	14	12	4	12	8	1	11	11	7	11
Total Disagree (no AIS)	2	5	16	5	4	12	1	5	8	5
Total Strongly Disagree (no AIS)	1	2	1	0	0	9	0	0	4	2
Total Strongly Agree (AIS)	3	0	0	2	9	0	6	1	1	3
Total Agree (AIS)	7	8	3	8	2	0	6	8	5	6
Total Disagree (AIS)	2	4	9	2	1	7	0	3	5	3
Total Strongly Disagree (AIS)	0	0	0	0	0	5	0	0	1	0

data are not substantial enough to determine a definite conclusion as to the cause of body dissatisfaction. A more positive statement, "I am satisfied with my body," yielded twenty-six participants in total who strongly disagreed or disagreed. Seventeen of the negative responses were from high school girls who do not have AIS, and nine were from

high school girls who do have AIS. This means that 76% of participants were not satisfied with their bodies, and 77% were high school girls without AIS who were unsatisfied with their bodies, and 75% were girls with AIS who were unsatisfied with their bodies. Although fewer participants demonstrated body dissatisfaction with a positive

prompt like this one, the majority of participants still exemplified the idea that they are dissatisfied with their bodies. Based on the data collected on both positive and negative statements centered around body satisfaction, it can be determined that high school girls may not be satisfied with their bodies. Because there is such a small difference between the data from high school girls with AIS and high school girls without AIS, it cannot yet be established that Adolescent Idiopathic Scoliosis causes high school girls to have a poorer emotional body image than those who do not have AIS (Figure 2).

The statement “I wish my body were more proportionate” resulted in twenty-seven participants strongly agreed or agreed, with only seven in disagreement. This is broken down with seventeen girls who do not have AIS in strong agreement or agreement and five girls in disagreement. For the high school girls with AIS, there were ten participants who strongly agreed or agreed with the statement and two who disagreed. This translates to 79% of all participants in strong agreement or agreement, with 77% of high school girls without AIS strongly agreeing or agreeing and 83% of participants with AIS strongly agreeing or agreeing. This information indicates that if given the chance, the majority of high school girls would change their bodies to be more proportionate. There is no indication of whether or not AIS causes high school girls to have a poor emotional body image since there is a small difference between the statistics of the test groups (Figure 3).

For the statement “I do not wish to change anything about my body,” one participant disagreed while thirty-three agreed or strongly agreed. The participants that did not have AIS had one participant disagree with the statement, and twenty-one participants agreed or strongly agreed. The other test group, those with AIS, all twelve participants agreed or strongly agreed. This means that 97% of total high school girls who took part in this survey wish to

change something about their bodies, with 96% of girls without Adolescent Idiopathic Scoliosis and 100% of girls with AIS wanting to change aspects of their bodies. This data indicate that the vast majority of high school girls do wish to change parts of their body, meaning that they have a relatively poor emotional body image. The repeated use of the word “wish” in the previously introduced statements allowed participants to consider the desires that they had for their bodies in both a negative and positive way. This yielded similar results that signify poor emotional body image in both test groups for both statements (Figure 4).

**Relevant to adolescent idiopathic scoliosis (AIS) using clothes to hide one’s body:** The statement “I try to hide my body with clothes” was one of the most relevant because it is the biggest body image issue that it had during my treatment for AIS. This statement resulted in sixteen participants responding that they strongly agree or agree and eighteen participants responding that they disagree or

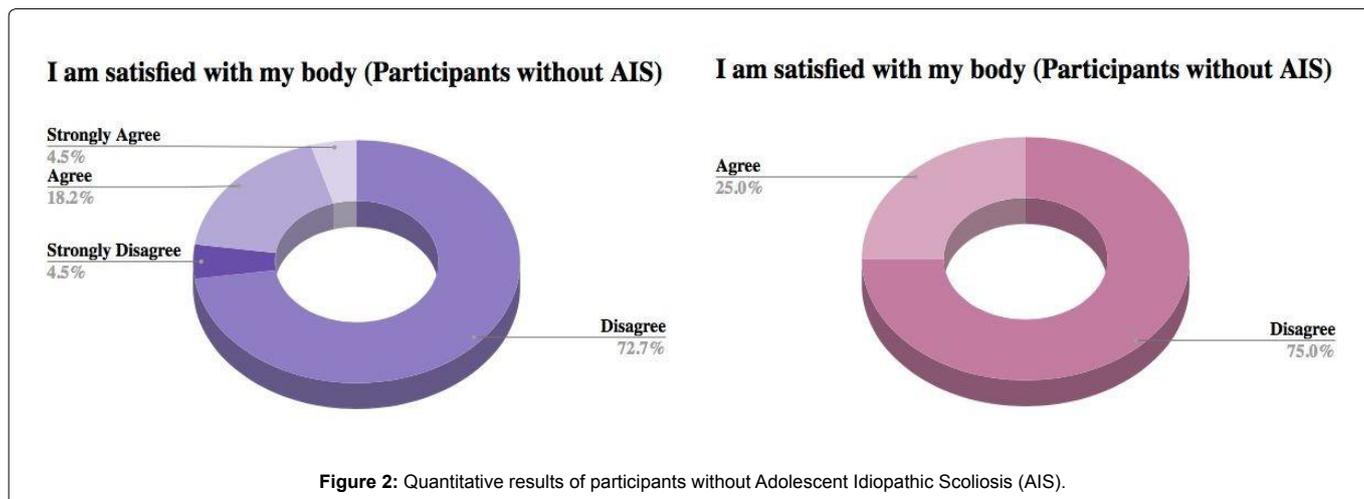


Figure 2: Quantitative results of participants without Adolescent Idiopathic Scoliosis (AIS).

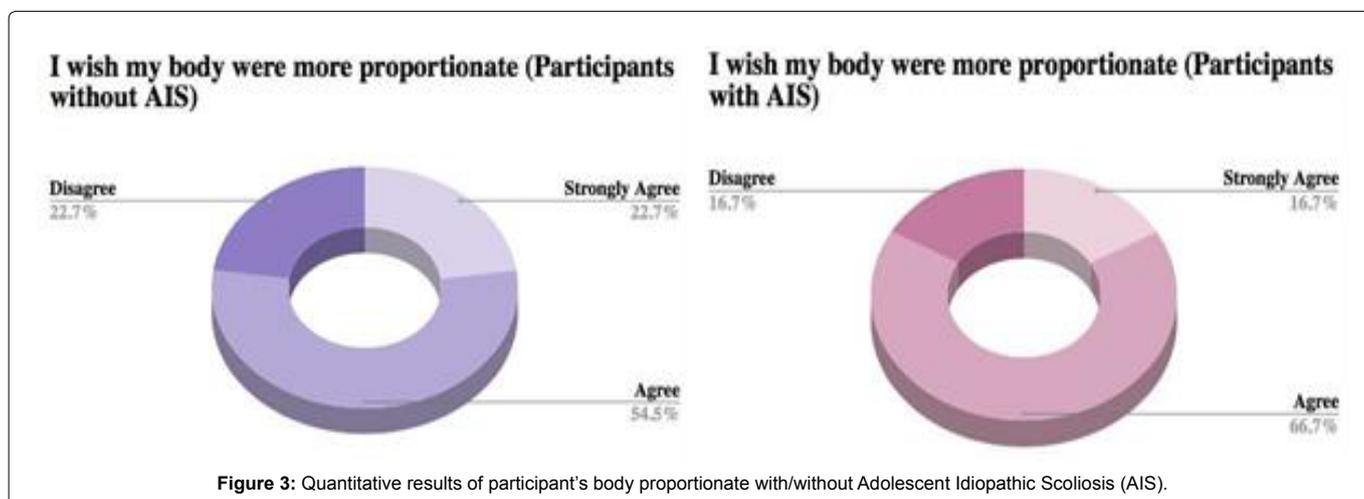


Figure 3: Quantitative results of participant’s body proportionate with/without Adolescent Idiopathic Scoliosis (AIS).

strongly disagree. The high school girls who did not have AIS had ten participants respond that they strongly agree or agree and twelve respond that they strongly disagree or disagree. Of all participants, 47% said that they strongly agree or agree and 53% said that they strongly disagree or disagree. 45% of girls without AIS reported that they strongly agreed or agreed and 55% reported that they strongly disagree or disagree. The participants with AIS had 50% say that they strongly agree or agree and 50% say that they strongly disagree or disagree. This statement yielded different results from the previous ones in that it did not have a glaring majority of participants who responded with similar answers. From only this data, it cannot be determined whether or not high school girls, with or without AIS, have a poor emotional body image because the statistics were relatively equal (Figure 5).

**Torso self-consciousness:** The other most relevant statement to Adolescent Idiopathic Scoliosis on the survey was “I feel self-conscious about my torso specifically” because this condition predominantly affects the torso. The responses to this statement were as follows: twenty-four participants who said that they strongly agree or agree and ten participants who said that they strongly disagree or disagree. For the high school girls without AIS, fifteen said that they strongly agree or agree, and ten said that they strongly disagree or disagree. For the high school girls who did have AIS, nine said that they strongly agree or agree, and three said that they disagree. The percentages

for this statement were as follows: 71% of total participants strongly agreed or agreed, and 29% strongly disagreed or disagreed. 68% of high school girls without AIS responded that they strongly agree or agree, and 32% responded that they strongly disagree or disagree. Of the girls with AIS, 75% said they strongly agree or agree, and 25% said that they strongly disagree or disagree. This data signify that the majority of high school girls are self-conscious about their torsos. In the test group of high school girls who have Adolescent Idiopathic Scoliosis, a higher percentage of participants felt self-conscious about their torsos specifically, this may indicate that they have a poorer emotional body image than those who do not have AIS (Figure 6).

**Trunk appearance perception scale:** For the second portion of the survey, patients were asked to assess themselves based on the previously mentioned Trunk Appearance Perception Scale (TAPS). Although this scale is normally only used for patients with AIS, decided to include it in the survey to see if could derive conclusions based on the severity of the AIS participants’ body perceptions. Of the participants with AIS, four girls rated themselves a two, four rated themselves a three, and four girls rated themselves a four. Upon further examination of each of these participants’ responses, it became clear that there were no trends in their responses to the first portion of the survey in relation to their ratings on the Trunk Appearance Perception Scale (Table 3).

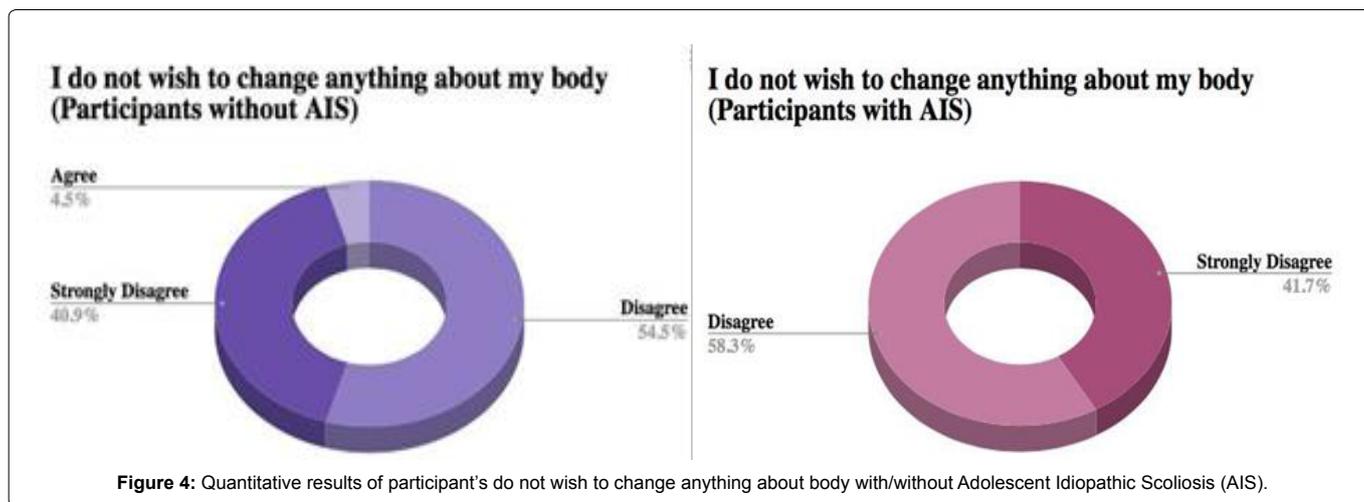


Figure 4: Quantitative results of participant's do not wish to change anything about body with/without Adolescent Idiopathic Scoliosis (AIS).

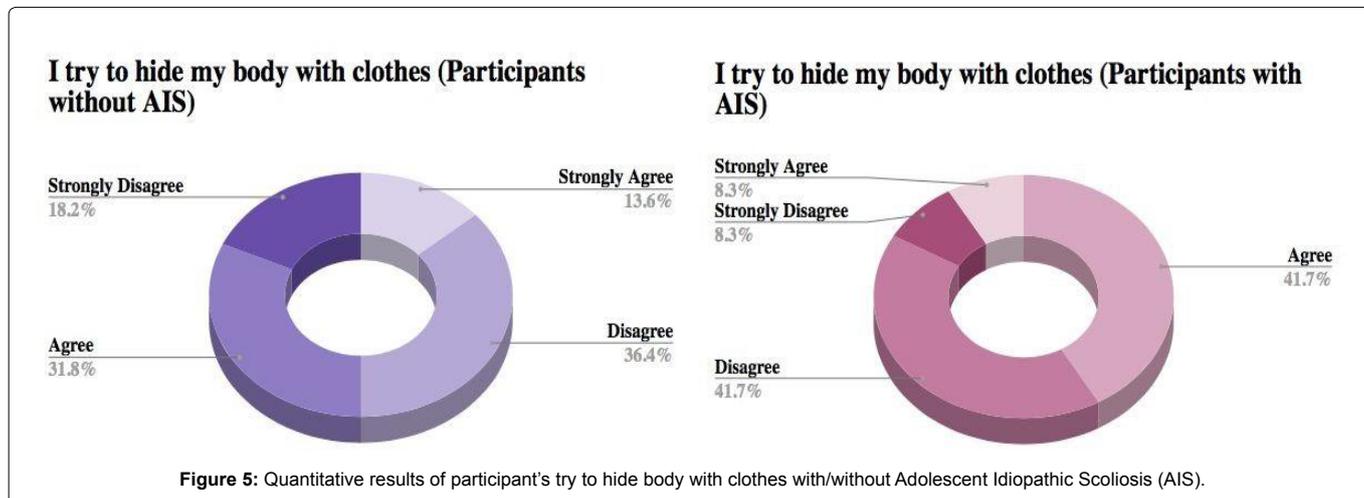
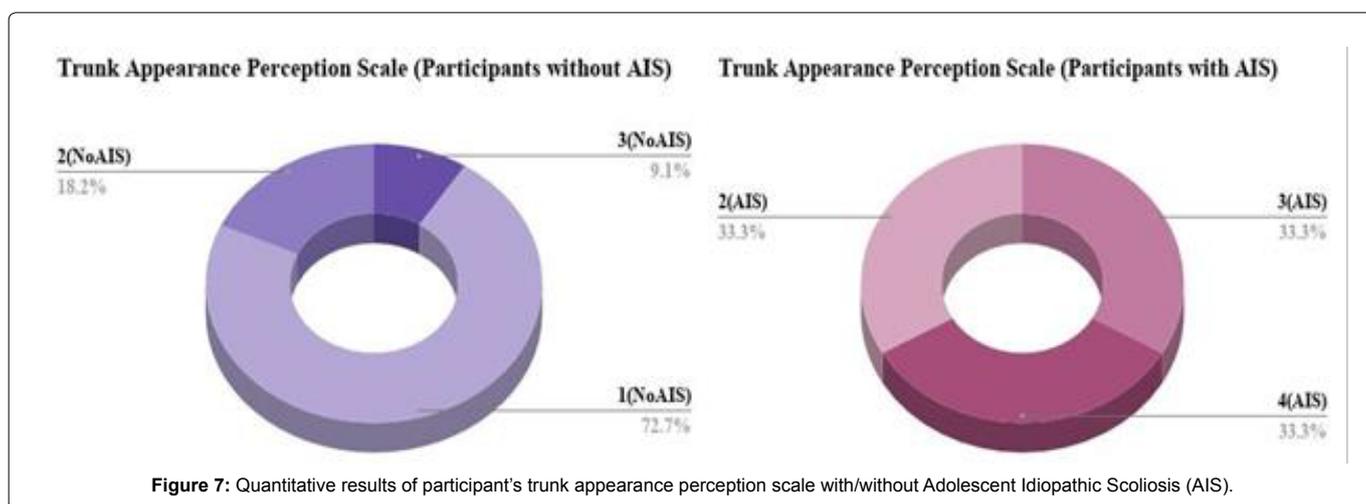
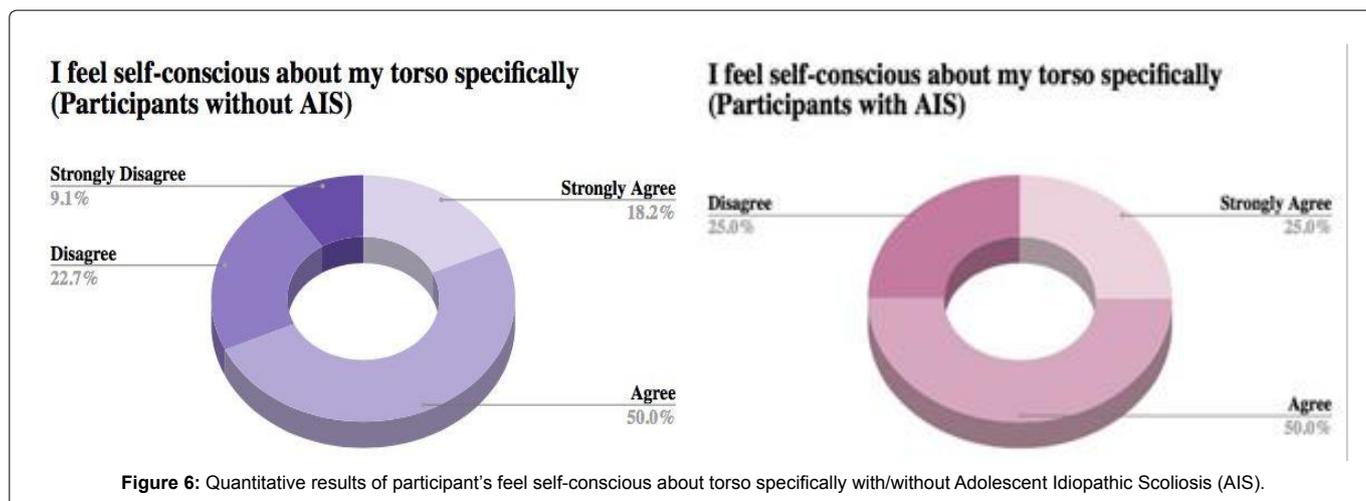


Figure 5: Quantitative results of participant's try to hide body with clothes with/without Adolescent Idiopathic Scoliosis (AIS).



**Table 3:** Trunk appearance perception scale.

	TAPS Scale #1	TAPS Scale #2
Total 1s	16	15
Total 2s	8	10
Total 3s	6	6
Total 4s	4	3
Total 5s	0	0
Total 1s (no AIS)	16	15
Total 2s (no AIS)	4	5
Total 3s (no AIS)	2	2
Total 4s (no AIS)	0	0
Total 5s (no AIS)	0	0
Total 1s (AIS)	0	0
Total 2s (AIS)	4	5
Total 3s (AIS)	4	4
Total 4s (AIS)	4	3
Total 5s (AIS)	0	0

Surprisingly, many of the participants who did not have AIS rated themselves above a one (non-deformed) even though they did not have AIS. Sixteen girls without AIS rated themselves a one, four girls rated themselves a two, and two girls rated themselves a three. This

only further proves the previous claim that the TAPS is not enough to measure an AIS patient's emotional body image since people who do not have AIS responded that they felt deformed (Figure 7).

**Qualitative results**

For the previously referenced final two statements of this survey, "I try to hide my body with clothes" and "I feel self-conscious about my torso specifically," participants were asked to explain their answers, representing qualitative data. For the first statement, "I try to hide my body with clothes," there were many different types of responses due to the open-ended nature of the prompt. Many girls' responses had to do with wearing clothes that they feel "comfortable" wearing. These responses were from high school girls who did not indicate that they strongly agree or agree with the statement given. In contrast, there were many participants who stated that they normally wear "baggy" or "loose-fitting" clothing, and these responses were accompanied by a strong agreement or agreement with the given statement. There was one response to this statement from a participant that has AIS who said "I have scoliosis so I try to hide my back and I hate backless shirts and dresses," indicating that the cause of her poor emotional body image may be AIS. However, since this is only one participant's response out of twelve total participants with AIS, no general conclusions can be drawn.

The second statement, “I feel self-conscious about my torso specifically,” generated different responses in the same way as the previous statement. There was an overwhelming trend in the responses that had to do with the participants being self-conscious about their stomachs more than their torsos. This type of response was evenly spread between the participants who did not have AIS and those who did have AIS. Also, many responses were geared more toward body positivity. For example, one response said “I think it’s fine and shouldn’t matter!” revealing that some high school girls in this research have a more positive emotional body image than others. Within the test group of girls who did have AIS, there were four different statements that explained that they were self-conscious about their torsos because of their Adolescent Idiopathic Scoliosis. One response read, “I have scoliosis and sometimes feel like my shoulders are uneven and my backpack is crooked.” This response proves the claim that AIS can cause emotional body image problems in high school girls, but because there were only four out of twelve participants with AIS that responded with this type of answer, no definite conclusions about the cause of poor emotional body image in high school girls with AIS can be made.

## Conclusion

While most high school girls who have AIS do have a negative emotional body image, those without AIS also have a negative view of their bodies, indicating that AIS does not necessarily cause this negative emotional body image among high school girls with AIS. Because the original hypothesis was that Adolescent Idiopathic Scoliosis causes high school girls to have a poor emotional body image, this hypothesis was ultimately rejected.

## Limitations

However, this hypothesis may not be entirely wrong due to the limitations of this research. Because there was a limited amount of time to conduct this research, it was challenging to have a large enough test group to draw definite conclusions. Also, it was difficult to have an even number of participants in each test group because it was impossible to know whether or not the volunteers taking this survey had AIS or not prior to them taking the survey. If there were more time to conduct this research, there would have been more participants in the survey so that the conclusions could be applied to a general population.

## Contribution to the field

The research that has been conducted contribute to the current body of research because this method could be replicated to include any type of spinal deformity to assess participants’ emotional body image. Also, this method could be used to assess the emotional body image of boys with any spinal deformity. This research is important to the field because AIS is a relatively common condition, which indicates further research on this topic.

## Implications

These results showed that the majority of high school girls have a poor emotional body image, implying that action must be taken to encourage girls to love their bodies. The data support more educational programs to teach girls to believe that they are beautiful. The hope is that girls will be encouraged by their schools, peers, and family to have confidence in their physical appearance to improve emotional body image among the female population. Although the data show that AIS is not necessarily the cause of poor emotional body image in

high school girls, emotional body image should still be addressed in their treatment by scoliosis patients’s doctors in order to make sure that girls’ confidence is not being depleted by Adolescent Idiopathic Scoliosis.

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## Author Affiliation

Top

AP Capstone Research Projects, Randolph High School, New Jersey, USA

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