RELATIONS BETWEEN STUDENTS’ ABILITIES AND ATTITUDES AND SUCCESS IN RHYTHMIC GYMNASTICS - GENDER SPECIFICITIES

Abstract
Although male or female characteristics are traditionally attributed to some sports, contemporary trends are going in the direction of changing gender inequality in sport and physical education. The aim of this research was to investigate the relationship between motor and musical abilities of students, attitudes towards rhythmic gymnastics, their success in mastering the program contents of the theory and methodology of rhythmic gymnastics (T&M RG) and genders. The sample consisted of 104 subjects, third year students of the Faculty of Sport and Physical Education in Belgrade. Motor and musical abilities were made operational by the scores on tests that are an integral part of the qualifying exam on the FSPE: the test of general motor abilities, the test of specific motor abilities with the ball, and the test for assessing the sense of movement and rhythm and checking musicality, and the success in mastering the content of T&M RG by the grade from this subject. Subjects’ attitudes were measured by the Connotative differential instrument, which includes three dimensions of an attitude: affective, cognitive and conative. In addition, the data on school achievement of subjects were collected. The results showed that the subjects of female and male gender did not differ in their achievements in the test for assessing the sense of rhythm and movement and musicality, as well as in their achievements in T&M RG. Also, it is shown that this test is predictive for the assessment in the subject T&M RG. Although the attitudes of both genders were very positive, it was shown that women had slightly more positive attitudes than men. The subjects’ attitudes towards rhythmic gymnastics were positively correlated with the grade in T&M RG. The results indicated that students of both genders in their future pedagogical practice would be ready to equally successfully apply rhythmic gymnastics as one of the physical education program contents.

Key words: SPORT/ INSTRUCTION / RHYTHMIC GYMNASTICS / GENDER SPECIFICITIES

INTRODUCTION

During the first decades of the twenty-first century, men and women have been equally actively participating in global sport: women have been playing soccer, both women and men have been participating in triathlon in all age groups, women have widely been testing themselves in water polo, boxing, wrestling, and men in figure skating, sports aerobics, synchronized swimming, rhythmic gymnastics ... The fact is that modern society is pushing the boundaries between men and women in various activities, including sports. European Parliament Resolution No. A50167/2003 (Di Cagno et al, 2009) discusses the tendency of changing gender inequality in sport, and the introduction of male and female athletes in sports that have recently been specific to one gender. In many traditional societies, individual sports are
attributed to male and female characteristics, and it is believed that men should not engage in “feminine sports” and women in “aggressive sports.” However, Klomsten and colleagues believe that the distinction between male and female characteristics in sport and physical education is based on social structure and current social stereotypes about gender roles, rather than on actual difference between the genders (Kломsten, Marsh, & Skaalvıl, 2005).

Although rhythmic gymnastics is traditionally considered to be female sport, the Faculty of Sport and Physical Education, back in 2000, University of Belgrade (FSPE), was among the first similar faculties in the region to introduce the subject of Theory and Methodology of Rhythmic Gymnastics (T&M RG) for men, three years before the first official competition in male rhythmic gymnastics had taken place. The main reason for introducing T&M RG for men is the fact that they, as future teachers of physical education and sport, would teach rhythmic gymnastics as one of the physical education curriculum contents prescribed by the Ministry of Education of the Republic of Serbia (Official Gazette of RS - Education Gazette, 2004). Recognized values of rhythmic gymnastics as a course content (the diversity of movements and movements with and without props in accordance with music, the contribution to general motor development and the development of creative abilities in children) should be carried out by physical education teachers of both genders. Physical education teachers can accomplish this goal with their professional knowledge and physical preparedness that they received during classes, as well as their positive attitudes towards rhythmic gymnastics.

There is small number of previous research studies that dealt with gender specificities related to rhythmic gymnastics, especially in the student population. The greatest number of research studies was aimed at determining the motor abilities, as well as the success of mastering different elements of rhythmic gymnastics. The research on male population, which was conducted at the Faculty of Physical Education, University of Zagreb, which aimed to determine the relations between morphological and primary motor dimensions with the success in rhythmic gymnastics, has shown that fast movements performance together with repetitive force is very significant for the performance of the elements of rhythmic gymnastics, (Wolf Cvitak, 1984). A group of Bosnian authors conducted a research with male students of the Faculty of Sport and Physical Education, University of Sarajevo in order to determine the relationship of basic motor abilities and the success in mastering stylized movement structures. Canonical correlation analysis did not provide any significant canonical factor, so motor dimensions and rhythmic gymnastics tasks relations can be described as weak and mostly insignificant (Šebić Zuhrić, Manić, Bonacin, & Hmjelovjec, 2008). Božanić and Miletić (2011) conducted a research on student population in order to determine possible differences between the genders in the performance of specific techniques in rhythmic gymnastics. The results indicated that the female students were dominant in the performance of body elements technique, while male students had an advantage in the performance of elements with props (Božanić, & Miletić, 2011). A research that examined the differences between male and female subjects when performing three different specific rhythmic gymnastics jumps showed that men had significantly higher parameters regarding the time of flight, the time of contact with the ground and jump height (Di Cagno et al, 2009). Given that the researchers in the described research studies used a variety of methods, these results are still difficult to compare.

Even though musical abilities may be an important predictor of success in mastering the elements of rhythmic gymnastics, very few research studies have dealt with this issue. Tumin and Krneta at the Faculty of Sport and Physical Education in Novi Sad conducted a research on the application of Sishor’s test in predicting success of students in practical test of rhythmic gymnastics and dance. The results of regression analysis showed that the variable the sense of rhythm was a predictor of success in performing the compulsory exercise without props (Tumin, & Krneta, 2009). However, there are still no research studies on gender specificities in musical abilities that may be important for the adoption of the contents of rhythmic gymnastics.

Gender differences in the attitudes of students towards rhythmic gymnastics have not been subjects of research studies until now. Given that the attitudes are permanent dispositions of personality that can
strongly affect behaviour, one can, to a certain level of reliability, predict the quality of their future professional engagement based on the knowledge of the structure and intensity of students’ attitudes towards rhythmic gymnastics. Considering that, as noted earlier, rhythmic gymnastics is traditionally considered a feminine sport, it is particularly important to determine the differences in attitudes between male and female students.

The aim of this research was to investigate the relationship between, motor and musical abilities, students’ attitudes towards rhythmic gymnastics, their success in mastering the program contents of T&M of Rhythmic Gymnastics and genders.

**METHOD**

**Sample**

The research included 104 subjects, third-year students of the Faculty of Sport and Physical Education in Belgrade who listened and passed the examination in T&M of Rhythmic Gymnastics in the school year 2011/12 in the fifth and sixth semester. The sample consisted of 29 (27.6%) female and 75 (72.4%) male subjects. The mentioned subjects enrolled in the FSPE in 2009/10.

**Variables**

*Achievement in the qualifying examination*

The indicators of motor and musical abilities, as well as general knowledge of subjects in the research were the results of the qualifying examination at the Faculty of Sport and Physical Education in Belgrade. The qualifying examination consists of the test of knowledge about sport and physical education, the test of general intellectual abilities, swimming polygon, the test of general motor abilities, the test of specific motor abilities with the ball and the test for assessing the sense of movement and rhythm and checking musicality. For the purposes of this research the following parameters were selected, which can be assumed to be associated with the success in T&M RG:

- The test of general motor abilities - This test assesses the level of general motor abilities on apparatus, required for successful coping with curriculum tasks and examinations in vocational subjects during the research. The test is in the form of polygons, and the results are expressed in seconds.
- The test of specific motor abilities with the ball, which is important for mastering the curriculum, and examinations in sports games, rhythmic gymnastics and others. The test is to be taken with several different balls (soccer, basketball, volleyball and handball), depending on the settings of the task in the polygon. Results are expressed in seconds.
- The test for assessing the sense of movement and rhythm and checking musicality - this test assesses: a) the sense of rhythm (linking movements and motion with the rhythm of the music given), b) the accuracy of performance of the given combination of movements and motion, c) the ability to connect the learned motion and movements, d) coordination of movements of different body parts. The composition consists of eight measures in 4/4 time, contains the elements of rhythmic gymnastics, dance and sports gymnastics. The candidate performs the composition with a random selection of musical accompaniment (one of three planned music options) in front of the Expert Commission for the assessment of the test. The Commission includes 3 members (professors from the subjects of T&M of Rhythmic Gymnastics, T&M of Dance and T&M of Sports Gymnastics). Each member of the Commission evaluates a candidate from 1 - 10 based on the number of elements correctly performed, on the level of performance, and on the sense of rhythm and coordination of motion and music. All three scores are added up and divided by three and make the final score for the candidate, which also represents the number of points.

Since school achievements of subjects could potentially be an important predictor of success in their studies, one of the variables in this research was presented as the points made on the basis of school achievements of the subjects.
The grade in T&M of Rhythmic Gymnastics

Testing knowledge and abilities of students within the course T&M of Rhythmic Gymnastics is done through practical and theoretical knowledge examination. The practical part of the examination involves grades: a) first colloquium - no props required composition with music, b) second colloquium - compulsory composition with jumping rope with music and c) final practical exam - compulsory composition with a selected prop (hoop, ball or cones) with music. The final grade, in addition to the practical part, includes the following elements: attendance and active participation in class, individual presentation within practical classes - realization of introductory - preparatory class stage with music using specific contents of RG, RG test terminology and final oral exam.

The structure of attitude towards rhythmic gymnastics

For measuring the structure of attitude towards rhythmic gymnastics we used an instrument Connotative differential (CD-15) (Janković, 2000a; 2000b). This instrument is based on the semantic differential technique, which was postulated by Osgood and associates in the 50s (Osgood, Succi, & Tannenbaum, 1957) and is intended for measuring the subjective perception of subjects towards the object of attitude.

Connotative differential consists of 15 pairs of opposite adjectives given in the form of bipolar evaluation scales with seven items (from -3 to +3). These adjectives are grouped into three dimensions: affective, cognitive and conative. Affective dimension refers to the emotional and evaluative aspect of subjective perception, and consists of the following scales: unpleasant - pleasant, repulsive - attractive, disgusting - nice, bad - good and ugly - beautiful. Conative dimension refers to the motivational aspect of subjective perception, and consists of the following scales: unremarkable - remarkable, unstimulating - stimulating, boring - interesting, unimportant – important and unmotivating - motivating. Last one, cognitive dimension refers to the cognitive aspect of subjective perception and consists of the following scales: meaningless – meaningful, incomprehensible - comprehensible, illogical - logical, unknown - well-known and unclear - clear. Connotative differential instrument has good metrical characteristics and is a very convenient technique for measuring the attitudes of subjects in the field of sports and physical education (Juhas, Orlić, Lazarević, Janković, & Matić, 2011).

Procedure

The instrument for measuring attitudes was applied during regular classes at the Faculty of Sport and Physical Education. The subjects participated in the research on a voluntary basis. The interrogation lasted about 15 minutes.

Statistical methods

Descriptive statistics was performed for data analysis (mean and standard deviation) along with conclusion statistics (t-test for independent samples, t-test for dependent samples, correlation analysis and regression analysis).

RESULTS

First statistical analysis had to determine gender differences in school achievement, motor and musical abilities. T-test for independent samples showed no statistically significant differences between male and female subjects in terms of scores obtained on the basis of school achievement and scores on the test for assessing the sense of movement and rhythm and checking musicality. The results also showed that male subjects had significantly less time than female ones in the test of general motor abilities (t(80)=-7.14, p<0.01) and in the test of specific motor abilities with the ball (t(79)=-3.49, p<0.01).

Next analysis was related to the differences in assessment in the subject of T&M RG between male and female subjects. T-test for independent samples showed no statistically significant difference between male and female subjects when it comes to this variable. Based on these results it can be concluded that female students and male students were equally successful in acquiring program contents of T&M RG.
The following analysis was related to the determination of the predictive value of the qualifying exam grades for the grade in the subject Rhythmic Gymnastics. We performed a regression analysis (enter method) in which the predictors were the results in the test of general motor abilities, in the test results of specific motor abilities with the ball, the score in the test for assessing the sense of movement and rhythm and checking musicality and test scores for school achievement and the grade in T&M RG represented criterion variable. This regression function was found to be statistically significant (R=0.50; F (4.72)=5.56; p=0.001). The set of predictor variables, partial correlation and statistical significance are shown in Table 1.

Table 1. Partial correlations and statistical significance for the predictors of grades in the subject T&M RG

<table>
<thead>
<tr>
<th>Predictors</th>
<th>β</th>
<th>t</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rhythm and movement</td>
<td>0.464</td>
<td>4.180</td>
<td>0.000</td>
</tr>
<tr>
<td>Ball motor abilities</td>
<td>0.101</td>
<td>0.811</td>
<td>0.420</td>
</tr>
<tr>
<td>General motor abilities</td>
<td>-0.093</td>
<td>-0.709</td>
<td>0.481</td>
</tr>
<tr>
<td>School achievement</td>
<td>-0.022</td>
<td>-0.178</td>
<td>0.859</td>
</tr>
</tbody>
</table>

In Table 1 it can be seen that the only significant predictor of grades in T&M RG are points in the test for the assessment of the sense of movement and rhythm and checking musicality. These results suggest that this test is a good predictor of success of candidates in mastering the program contents of T&M RG.

Given that the sample of female subjects was relatively small, regression analysis was not conducted separately for female and for male subjects, so the results will be displayed through the coefficient of correlation. Pearson’s correlation coefficient between the score on the test for assessing the sense of movement and rhythm and checking musicality and the grade in the subject of RG T&M for female subjects is 0.449 (p<0.01), and 0.447 for male subjects (p<0.01). Other correlations were not statistically significant. Taking into account that these correlations have very similar values, it can be concluded that the intensity of the relationship between the points in the test for assessing the sense of movement and rhythm and checking musicality and the grade in the subject of RG T&M for males and females is about the same.

Next step in data analysis was descriptive analysis of students’ attitudes towards rhythmic gymnastics measured by the instrument Connotative differential. At the beginning the scale of -3 to +3 was transformed into scale from 1 to 7 for the possibility of statistical data analysis, so that the value of -3 corresponds to the value of 1, and the value of +3 to the value seven. Then the average values for affective, cognitive and conative dimension of attitude, and for attitude in general were calculated. The results of descriptive statistics showed that, overall, students had very positive attitudes towards rhythmic gymnastics. Arithmetic dimension for the affective dimension of attitude is 6.12±0.90, for cognitive 6.14±0.81, for conative 5.91±1.03 and for the attitude in general 6.06±0.85.

Gender differences in the intensity of attitude towards rhythmic gymnastics were tested by t-test for independent samples (Table 2). The results showed that female subjects had significantly higher scores than male subjects in all three dimensions of Connotative differential instrument as well as on the scale in general. These results indicated that female students had more positive attitudes towards rhythmic gymnastics than male students. It is important to note that male subjects had a positive attitude, but of a slightly more moderate intensity as compared to female subjects.
Table 2. Gender differences in the intensity of attitude - Descriptive statistics and t-test for independent samples

<table>
<thead>
<tr>
<th>Attitude</th>
<th>Gender</th>
<th>N</th>
<th>AM</th>
<th>SD</th>
<th>t</th>
<th>df</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Emotional component</td>
<td>F</td>
<td>29</td>
<td>6.57</td>
<td>0.56</td>
<td>-3.32</td>
<td>102</td>
<td>0.001</td>
</tr>
<tr>
<td></td>
<td>M</td>
<td>75</td>
<td>5.95</td>
<td>0.94</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cognitive component</td>
<td>F</td>
<td>29</td>
<td>6.56</td>
<td>0.43</td>
<td>-3.44</td>
<td>102</td>
<td>0.001</td>
</tr>
<tr>
<td></td>
<td>M</td>
<td>75</td>
<td>5.98</td>
<td>0.87</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Conative component</td>
<td>F</td>
<td>29</td>
<td>6.53</td>
<td>0.60</td>
<td>-4.11</td>
<td>102</td>
<td>0.000</td>
</tr>
<tr>
<td></td>
<td>M</td>
<td>75</td>
<td>5.67</td>
<td>1.06</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>General score</td>
<td>F</td>
<td>29</td>
<td>6.55</td>
<td>0.47</td>
<td>-3.99</td>
<td>102</td>
<td>0.000</td>
</tr>
<tr>
<td></td>
<td>M</td>
<td>76</td>
<td>5.86</td>
<td>0.89</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 3 presents the correlation coefficients between the three dimensions of attitude towards rhythmic gymnastics and the grade from the subject of T&M RG for female and male subjects separately and for the sample in general. The results of correlation analysis showed that observed in the whole sample, there were statistically significant positive correlations of moderate intensity between the grade from the subject of T&M RG and all three dimensions of attitude as well as attitude in general. This correlation indicates that students with higher grades from T&M RG have a more positive attitude. However, the structure of this relationship was somewhat different for female and male subjects. For female subjects, there were statistically significant positive correlations between the grades from T&M RG and conative and cognitive dimensions of attitude, while the connection between cognitive dimensions of attitude and the grade was not statistically significant. On the other hand, for males there are positive correlations between all three dimensions of attitude and the grade in T&M RG.

Table 3. Relationship between the attitude towards rhythmic gymnastics and the grade in the subject of T&M Rhythmic Gymnastics - Pearson’s correlation coefficient and significance

<table>
<thead>
<tr>
<th>Connotative differential</th>
<th>F</th>
<th>p</th>
<th>M</th>
<th>p</th>
<th>Whole sample</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grade * affective dimension</td>
<td>0.425</td>
<td>0.022</td>
<td>0.316</td>
<td>0.006</td>
<td>0.361</td>
<td>0.000</td>
</tr>
<tr>
<td>Grade * cognitive dimension</td>
<td>0.164</td>
<td>0.397</td>
<td>0.437</td>
<td>0.000</td>
<td>0.419</td>
<td>0.000</td>
</tr>
<tr>
<td>Grade * conative dimension</td>
<td>0.600</td>
<td>0.001</td>
<td>0.306</td>
<td>0.008</td>
<td>0.377</td>
<td>0.000</td>
</tr>
<tr>
<td>Grade * general score</td>
<td>0.476</td>
<td>0.009</td>
<td>0.376</td>
<td>0.001</td>
<td>0.414</td>
<td>0.000</td>
</tr>
</tbody>
</table>

**DISCUSSION**

The aim of this research was to investigate the relations between the genders, motor and musical abilities of the students, their attitudes towards rhythmic gymnastics and their success in mastering the program contents of T&M of Rhythmic Gymnastics. Motor and musical abilities in this research were operationalized by the subjects’ achievements in the tests that are an integral part of the qualification exam at the FSPE: the test of general motor abilities, the test of specific motor abilities with the ball and the test for assessing the sense of rhythm and movement and checking musicality, and the success in mastering the content of T&M RG by the grade in this subject.
The obtained data showed that male subjects achieved significantly better results compared to female subjects in the tests of general motor abilities and specific motor abilities with the ball. These results were expected and in accordance with the previous research studies on the development of motor abilities in men and women (Bjelić, & Simović, 2005).

Although they differ in their motor abilities, men and women had equal achievement in the test for assessing the sense of rhythm and movement and checking musicality, and also they were equally successful in mastering the program contents of T&M RG. Since the checking of the sense of rhythm and movement and musicality was carried out by a pre-given combination of movements and by movement in accordance with three given types of music, it is evident that both men and women were well prepared for the test and possessed equal potential of habits of motion for the adoption of basic structures of movement in which the aesthetic component is also present. Also, equally good success in mastering the content of T&M RG shows that elementary level of abilities in this field, designed for work in schools, can equally well be realized by both men and women and that the program is fully adapted to the abilities of students of both genders.

The results of regression analysis showed that the tests of general motor abilities and specific motor abilities with the ball, as well as school achievement were not significant predictors of grades in T&M RG. A possible reason for this may be that both tests of motor abilities were performed in the form of polygons with more motor tasks, and the success was expressed in time units, so this measure was not sensitive enough to predict the success in mastering specific contents of RG. The previous research studies, which have dealt with the connection of motor abilities and success in mastering the content of RG within student population, did not provide unique results (Bozanić, & Miletić, 2011; Di Cagno et al, 2009; Šebić Zuhrić et al, 2008; Wolf Cvitak, 1984). To ascertain the relationship between motor abilities and effectiveness in mastering the program contents of RG, in future research studies it is necessary to apply tests that will measure specific motor abilities important for rhythmic gymnastics.

The test to estimate the sense of rhythm and movement and check musicality proved to be a significant predictor of the success in mastering the program contents of T&M RG, for both women and men. These results show that this test is a good measuring instrument for determining the elements important for mastering the basics of rhythmic gymnastics: the sense of rhythm, accuracy in performance of the given combination of motion and movement, the ability to connect the learned motion and movement and harmonization in the motion of different parts of the body. Also, taking into account the fact that men and women were equally successful in this test, it can be concluded that it is adapted to candidates of both genders.

The differences between male and female subjects when it comes to scores obtained on the basis of school achievement were not statistically significant. Also, the school achievement of the subjects did not show to be a significant predictor of success in mastering the contents of T&M RG. From such data it can be concluded that the achievement of students in T&M RG is not determined by previous school knowledge, but the knowledge and skills they have acquired during their studies.

The results of descriptive statistics showed that students in general have a very positive attitude towards rhythmic gymnastics. Given that the data on the attitudes of students were gathered after the classes of T&M RG it can be assumed that the process of learning at least partially influenced the formation of positive attitudes. With this in mind, it can be expected that the students, as well as physical education teachers, would apply the contents of rhythmic gymnastics and influence the development of students’ interest in this type of exercise.

Although the attitudes of both genders are positive, the results of t-test showed that female subjects still have a positive attitude towards rhythmic gymnastics as observed in all three dimensions of attitude (affective, cognitive and conative) compared to male subjects. These results were expected and in accordance with the pervasive stereotypes of rhythmic gymnastics as a sport that is characteristic for women (Di Cagno et al, 2009).

The results of correlation analysis showed that, observed in the whole sample, there is a positive
correlation between the average intensity of all three dimensions of attitudes toward rhythmic gymnastics and the success in mastering T&M RG. These results are in accordance with previous research studies which indicate the importance of having a positive attitude for the success in a sport activity (Havelka, & Lazarevic, 1981). However, the structure of this relationship is somewhat different for female and male subjects. For female subjects the success in mastering the program contents is associated with affective and cognitive dimensions of attitude, while for male ones it is associated with all three dimensions of attitude. In order to elucidate the structure of this relationship, future research studies should compare the attitudes of the rhythmic gymnastics classes before the start of the process and after its completion. Given that rhythmic gymnastics is a sport that was traditionally attributed to women, the basic premise is that male subjects during the teaching process experience greater attitude change in a positive direction as compared to female subjects, especially on the cognitive dimension of attitude. In support of this hypothesis are the results of a research conducted on a group of male students who showed that the inclusion of aesthetic activity during exercise led to a significant improvement in the subjective perception of exercise compared to the group that has not been involved in aesthetic activity (Miletić, 2012).

**CONCLUSION**

In this research we have investigated relations between genders, motor and musical abilities, students’ attitudes towards rhythmic gymnastics and their success in mastering the program contents of T&M of Rhythmic Gymnastics. The results showed that male and female subjects had equal achievement in the test for assessing the sense of rhythm and movement and checking musicality, and that they were equally successful in mastering the program contents of T&M RG. Taking this into account, it can be concluded that the students of both genders are equally qualified to implement the program of rhythmic gymnastics in teaching physical education with both girls and boys. Also, the subjects of both genders have very positive attitudes towards rhythmic gymnastics, which will contribute to their willingness to apply the contents of rhythmic gymnastics and to encourage students to practice this type of exercise. Given that female subjects still have a more positive attitude than male subjects, it is important to include boys as much as possible in the aesthetic forms of movements (rhythmic gymnastics, dance...) considering that such activities contribute to the improvement of the subjective perception of exercise (Miletić, 2012).

In this research no significant relations were obtained between the success in mastering the program contents of T&M RG and assessed motor variables. In order to understand these relations more precisely the tests that would measure specific motor abilities important for rhythmic gymnastics should be applied in future research studies. Also gender specificities related to musical abilities should be explored and measured by some more precise instrument, such as Sishor’s test (Mirković-Radoš, 1998). To verify that the learning process influences the formation of attitudes towards rhythmic gymnastics, the attitudes of subjects of both genders should be compared before the start of the teaching process and after its completion.

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